JOURNAL
OF
THE DEPARTMENT OF MUSEOLOGY

54/3

VOLUME : THREE

UNIVERSITY OF CALCUTTA

2004

CUB - HO 5662 - 3 - G118611

JOURNAL
OF
THE DEPARTMENT OF MUSEOLOGY

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Head of the Department of Museology

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Published by the Department of Museology, University of Calcutta, and printed by
Sri Pradip Kumar Ghosh, Calcutta University Press, 48, Hazra Road, Kolkata – 700 019.

Price : Rs. 40/- only

Dedicated to the Memory

of

PROFESSOR SANTOSH KUMAR BOSE

(1933-1991)

FORMER PROFESSOR AND HEAD, DEPARTMENT OF MUSEOLOGY

CALCUTTA UNIVERSITY

Professor Santosh Kumar Bose

(1933-1991)

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সম্পাদকীয়

শ্রদ্ধেয় স্যার

কয়েকমাস আগে পশ্চিমবঙ্গের একটি আঞ্চলিক সংগ্রহশালার রজত জয়ন্তী পালিত হল। আমার সঙ্গে এই সংগ্রহশালার সর্ম্পক দীর্ঘদিনের। সে কথা এখন বড় মনে পড়ে। আমার বিশ্ববিদ্যালয়ে শিক্ষকতার শুরু ১৯৭৬ সালে। স্যার অর্থাৎ অধ্যাপক সন্তোষ কুমার বসু একদিন 'পানুদা' (শিল্পী প্রাণকৃষ্ণ পাল মহাশয়) কে নিয়ে আমার বাড়ীতে হাজির ১৯৭১ সালে এক সকালে। আমি দুজনকে একসাথে দেখে ভয় পেয়ে গিয়েছিলেম—কি হল? স্যার কথায় কথায় বললেন যে বারুইপুরে গেছিলাম, বারুইপুরের সুন্দরবন আঞ্চলিক সংগ্রহশালায় তোমাকে কিছু কাজ করে দিতে হবে। আমি সবিনয়ে জিজ্ঞেস করেছিলাম, স্যার কি কাজ করতে হবে ওখানে? স্যার বললেন যে হেমেনবাবুর সাথে আমার কথা হয়েছে ওখানে শিল্পবস্তুগুলির সংরক্ষণের দায়িত্ব তোমাকে নিতে হবে। স্যারের আদেশ আমাকে রক্ষা করতেই হবে। এইভাবেই পথ চলা শুরু। আমি খুব ভালো চিনতাম না হেমেন মজুমদার মহাশয়কে কিন্তু আমার স্যারেদের কাছে নাম শুনেছিলাম। একদিন হেমেনবাবু সংগ্রহশালাবিজ্ঞান বিভাগে হাজির, স্যার ডেকে পাঠিয়ে বললেন সংগ্রহশালায় একটি ছোট সংরক্ষণাগার করতে কি কি প্রয়োজন তা তুমি লিখে দাও এবং এগুলি কোথায় কিভাবে পাওয়া যাবে তা বলে দাও। স্যার বললেন এক্ষুণি করে দিতে হবে, খুব তাড়াতাড়ি না হলে ভীষণ অসুবিধে, কারণ ওখানে একটি প্রদর্শনীর আয়োজন করা হবে—তাই শিল্পবস্তুগুলির যথাযথ সংরক্ষণ করা খুবই দরকার, না হলে খুব ক্ষতি হবে। কাগজ কলম নিয়ে বসে কি কি লাগবে তার একটি সংক্ষিপ্ত তালিকা করে দিলাম। হেমেনবাবু স্যারের সাথে কথা বলে চলে গেলেন। কিছুদিন পর আমি তখন ক্লাসে আছি, হঠাৎ দরজায় শব্দ, বেরিয়ে দেখি স্যার দাঁড়িয়ে আছেন—শচীন তোমার সাথে কথা আছে, সেদিনের কথামত তিনি দেখালেন প্রচুর ছবি, সুন্দরবন আঞ্চলিক সংগ্রহশালার অপূর্ব সংগ্রহ। শুরু হল আমার—এই আঞ্চলিক সংগ্রহশালায় যাওয়া, কিছুদিন কাজ করে সাজিয়ে দিলাম একটি ছোট সংগ্রহশালা সংরক্ষণাগার। বেশ কয়েকদিন একাই শিল্পবস্তুগুলির প্রাথমিকভাবে সংরক্ষণ করার কাজও করলাম কিন্তু ক্লান্ত হয়ে গেলাম। এবার বিভাগে ফিরে এসে ছাত্র-ছাত্রীদের বললাম—'দেখ, আমি বারুইপুর সুন্দরবন আঞ্চলিক সংগ্রহশালায় কাজ করছি তোমরা চল আমার সাথে, ছুটির সময় ওখানে সংরক্ষণ করার কাজ একসাথে সবাই মিলে করি।' ধুয়ে মুছে ও রাসায়নিক পদ্ধতিতে শিল্পবস্তুগুলি পরিষ্কার করলাম সবাই মিলে। স্যার তাড়া দেন। 'সব তাড়াতাড়ি কর, প্রর্দশনীর জন্য আমাকে শিল্পবস্তুগুলি দাও।' তাড়াতাড়ি করতে শুরু করলাম। কিন্তু তখন ওখানে টিউবওয়েলের জল ছাড়া জলের অন্য কোন ব্যবস্থা ছিল না। পাথরের মূর্ত্তিগুলি পরিষ্কার করার জন্য প্রচুর জল দরকার। বালতি করে জল আনাতে হয়—বেশ কয়েকটি মূর্ত্তি বালতির জল দিয়ে পরিষ্কার করলাম কিন্তু শেষ হয় না। স্যার কিন্তু বলেই চলেছেন 'কি হল মূর্ত্তিগুলো দাও? কাজটা আরো তাড়াতাড়ি করা দরকার।' আমি টিউবওয়েলের কাছে একটি পরিষ্কার জায়গায় কিছু মূর্ত্তি তুলে নিয়ে গিয়ে পরিষ্কার করলাম। কাজ মোটামুটি শেষ করলাম। স্যার ও আমি একসাথে ট্রেনে বাড়ী ফিরতাম প্রায়ই। ট্রেনে আসার সময় স্যার বলতেন এই সংগ্রহশালাগুলির জন্য কিছু করা আমাদের উচিৎ, পরবর্তীকালে বিশ্ববিদ্যালয়ের সংগ্রহশালা বিভাগের প্রধান হওয়ার পর ডি. আর. এস. স্কীমে এই সংগ্রহশালা উন্নয়নের জন্য কিছু কাজ হয়, কিন্তু সেই প্রক্রিয়াও পূর্ণ হয়নি। দুঃখ থেকে গেল, স্যার যে কাজের দায়িত্ব দিয়েছিলেন তা সম্পূর্ণ হোল না। স্থানীয় ও গ্রামীণ মিউজিয়ম আন্দোলনের পথিকৃত অধ্যাপক সন্তোষ বসু, আমার প্রিয় স্যার, আজ নেই, তাঁর দেওয়া দায়িত্ব পালনের চেষ্টা করেছি। স্যার ঐ সময় আমাকে একদিন ট্রেনের মধ্যে বললেন, শচীন একটা ছোট বাংলা বই লিখবে, যাতে বাংলার গ্রামীণ সংগ্রহশালাগুলি শিল্পবস্তুগুলি সংরক্ষণ করার জন্য হাতের কাছে একটা কিছু পায়—এই স্মৃতি সত্তা ও ভবিষ্যৎ রক্ষা করতে হবে।' লেখার সাহস পাইনা—কিন্তু করতেই হবে। আমার সবচেয়ে কাছের স্যার, যার কাছে আমেরিকার সংগ্রহশালার নানা গল্প

শুনতাম। গল্প শুনতাম ভারতীয় সংগ্রহশালার প্রবাদ পুরুষদের কথা, সংগ্রহশালায় ইতিহাস, সংরক্ষণ ইত্যাদি সেই স্যার অর্থাৎ অধ্যাপক সোমনাথ ভট্টাচার্য মহাশয়ের কথা বলছি। তাকে সাহস করে একদিন বললাম—স্যার, একটা বাংলায় সংগ্রহশালার ইতিহাস যদি আপনি লেখেন তাহলে খুব ভালো হয়। আমি শিল্পবস্তু সংরক্ষণ করার পদ্ধতি লিখবো। স্যার রাজি হলেন — আমাদের বাংলায় লেখা প্রথম বই প্রকাশ হল, "সংগ্রহশালার ইতিহাস ও সংরক্ষণ"। পরে অবশ্য সাহস করে 'শিল্পবস্তু সংরক্ষণ' আর একটি বই আমি লিখেছিলাম, গ্রামীণ এই অরক্ষণীয়া শিল্পবস্তুগুলির কথা ভেবে, ফিরে যাই সুন্দরবন আঞ্চলিক সংগ্রহশালায়। সুন্দর ভাবে সেইসব শিল্পবস্তু নিয়ে প্রর্দশিত হল শিল্পসম্ভার, বহু ধরণের মানুষ দেখলেন, সভায় বক্তব্য শুনলেন। এক আনন্দ ঘন তৃপ্তির পরিবেশে বাড়ী ফিরলাম সেদিন। ভাবতে ভাবতে আসছিলাম "জীবনে জীবন যোগ করা না হলে কৃত্রিম পণ্যে ব্যর্থ হয় গানের পশরা" এমনি করে ছাত্র-শিক্ষক সবাই কাজ না করলে শিল্পবোধ তৈরী করা যাবে না। হারিয়ে যাবে শিল্পবস্তু, শিল্পসম্পদ—সব কিছুই।

প্রিয় এই সংগ্রহশালার দুঃসময় নেমে এল ১৯৮১ সালে। একটি রাজনৈতিক দলের বিভ্রান্ত কিছু মানুষ এই সংগ্রহশালার প্রত্নতাত্ত্বিক শিল্পবস্তুগুলির প্রভূত ক্ষতিসাধন করে, কিছু প্রত্নবস্তু ধ্বংস করে, এতো অন্যায়? অধ্যাপক বুদ্ধিজীবি, শিক্ষক, লেখক, শিল্পী এই কাজ মেনে নিতে পারেন নি। শিল্পসচেতন মানুষদের নিয়ে ১৭ই জুলাই ১৯৮১ সালে ত্রিপুরা হিতসাধনী সবায় মঞ্চে প্রতিবাদ করা হয়। স্যারের সাথে আমিও প্রতিবাদ সভায় বক্তব্য রাখি। বিশ্বজোড়া বিবেক তার প্রতিবাদ করছে। আজ দেখছি আরো বড় এক অশনি সংকেত। সভ্যতা বিকাশের অন্যতম পীঠস্থান ইরাক এখনও জ্বলছে। প্রায়ই সংবাদপত্রে দেখি শিল্পবস্তুগুলি বিভিন্নভাবে ক্ষতিগ্রস্থ হচ্ছে হারিয়ে যাচ্ছে আমাদের স্মৃতি-সত্তা-ভবিষ্যৎ।

স্যার কিন্তু ছোট ছোট গ্রামীণ সংগ্রহশালার শিল্পবস্তুগুলি সংগ্রহ, নথীকরণ, সংগ্রহগুলিকে প্রদর্শিত করার জন্য সাহায্য করা এবং এই সমস্ত কার্য্যকলাপের সাথে ছাত্র, গবেষকদের যুক্ত করা ছিল তার ধ্যান জ্ঞান। ভারতবর্ষের বিভিন্ন সংগ্রহশালা বিশেষ করে পশ্চিমবঙ্গের সংগ্রহশালাগুলির সঙ্গে তার সম্পর্ক ছিল নিবিড়। স্যারের সাথে আমাদের সম্পর্ক ছিল ফিলোজফার এবং গাইডের। ছাত্র-শিক্ষক সম্পর্ক ছিল প্রায় একটি 'অবিভক্ত পরিবারের' মতই। বিশ্ববিদ্যালয়ের গণ্ডী পেরিয়ে সব ছাত্র ছাত্রীদের জীবন-জীবিকা হয়ত সংগ্রহশালার সাথে যুক্ত হয়নি, কিন্তু স্যারের সাথে সম্পর্কের ছেদ পড়েনি কখনও।

স্যারের বিশ্ববিদ্যালয়ে শেষ দিনটি এখনও ভুলতে পারিনি। আমরা তখন শতবার্ষিকী ভবনের নীচ তলার একটি ঘরে বসতাম। হঠাৎ স্যার এসে উপস্থিত, সেদিন পরীক্ষার দিন ছিল। সব খবর নিলেন, নীচে বসেই—উপরে পরীক্ষার ঘরে গিয়ে খবর নেওয়ার মত শরীরের অবস্থা ছিল না। খুব দুর্বল, স্বাভাবিকভাবে শ্বাস নিতে পারছেন না। পরীক্ষা চলছে সব নিয়ম কানুন মেনে, খবর দিলাম, একটু মৃদু হাসলেন। একটু পরে আমাদের বললেন, 'আমার শরীর খারাপ, আমি বাড়ি যেতে চাই'। ধনেশ্বর আমাদের বিভাগে কর্মরত, তাকে বললাম, 'ধনেশ্বর তুমি যেকোন ভাবে যাওয়ার জন্য একটা গাড়ী দেখ'। ধনেশ্বর তাড়াতাড়ি বেরিয়ে গাড়ী ধরেতে গেল। ৫-৬ মিনিটের মধ্যে একটি রিকসা ধরে নিয়ে এল। আমিও অতুলদা স্যারকে ধরে ধরে নিয়ে গেলাম রিকসা পর্য্যন্ত। স্যার রিকসায় উঠেই বললেন 'শচীন তুমি আমাকে বাড়ীতে পৌছে দাও'। আমি স্যারের সাথে রিকসায় উঠে বসলাম। যেতে যেতে বলছি 'স্যার এবারে নতুন রুটিন করতে হবে, বিভাগের অনেক কাজ পড়ে আছে' ইত্যাদি ইত্যাদি। কলেজস্ট্রীট 'বাটার' কাছে রিকসা আসতেই স্যার বললেন, 'শচীন সামনের এই বাড়ীর দুতলায় তুমি চলে যাও, প্রকাশক মহাশয়কে বল আমার বই এর ছাপানো একটি কপি দিতে'। অন্ধকার একটি বাড়ীর মধ্যে গিয়ে আমি স্যারের নাম করতেই "ভারতশিল্পে দেহজ শ্রম ও অন্যান্য প্রবন্ধ বইটি দিল। বইটি আমি স্যারের হাতে তুলে দিলাম। উনি বললেন, 'পরীক্ষা চলছে তুমি বিশ্ববিদ্যালয়ে চলে যাও, আমি চলে যেতে পারবো, অসুবিধা হবে না।' আমি ফিরে এলাম সেদিন ছিল শুক্রবার—সোমবার আমার সহকর্মীরা বাড়ীতে গিয়ে খবর দিল "স্যার মারা গেছেন"। শেষ হল ছাত্র-শিক্ষক সম্পর্কের একটি অধ্যায়। অধ্যাপক সন্তোষ কুমার বসু শিক্ষামূলক

academic কাজে কতটা নিয়মনিষ্ঠ (Methodical) ছিলেন, তার একটি নমুনা দিচ্ছি। উনি সম্ভবত : 'Art & Architecture of Bengal' নামে একটি বই লেখার পরিকল্পনা করেছিলেন বেশ কিছুকাল আগে। দুর্ভাগ্যবশত: বইটি প্রকাশ উনি করে যেতে পারেন নি। কয়েকদিন আগে সংগ্রহশালা বিজ্ঞান বিভাগে তাঁর নিজের হাতে লেখা, বইটির একটি খসড়া পরিকল্পনা পাওয়া গিয়েছে। পরিকল্পনাটি হুবহু তুলে দিচ্ছি ভবিষ্যতের গবেষক এবং শিক্ষকদের কাছে, একজন আদর্শ শিক্ষকের জ্ঞানের ব্যাপ্তি, চিন্তার স্বচ্ছতা এবং পরিকল্পনার উদাহরণ সরূপ —

PREHISTORIC BEGINNINGS

Chapter : 1

The geograpical setting of Bengal river plains of Bengal — deltaic areas — sea coasts — highlands — on the northern eastern and north eastern areas — highlands of the Western Bengal — climate — geo-ethnic — character of Bengal — natural routes paths of communications with rest of Indian sub-continent and South-East Asian mainland coasts and island areas.

Stone age in Bengal — the Old Stone age artifacts of Bengal — middle stone age and Neolithic tools — their beauty of form and methods of preparation — derivative conclusions regarding cultural contacts with rest of India and beyond India. Stone-age sites of Bengal — Bankura-Purulia, Burdwan etc.

Neolithic Sites etc.

Begining of Chalcolithic period and civilisation — Pandu Rajar Dhibi — Goswami Khanda — Beauty of terracotta pottery chanel spouted Bowls etc, forms — colour and painted and etched designs on pottery form of metal implements. Possible contacts with other post — Harappan culture — complexes.

Copper celts of Bengal — Midnapore and other areas.

General artistic appreciation.

Illustrations :

1. Line Drawing — 5 Stone tools.
2. Art Plates — 1 Stone Hand Axe
   1 Neolithic Celt.
   3 Potteries.
3. Map — Pre-histonic and Proto-historic sites of Bengal.

DEVELOPMENTS IN EARLY HISTORIC PERIOD

Chapter : 2

Bengal in Mauryan Age — General description of art-centres and find spots — nature of finds — terracottas showing figural art — analysis of style and technique. The general connection with gangetic valley terracottas from other centres of India.

Art of Bengal during the Sunga and Kushana Periods — Nature of finds — monuments and structures, terracottas, stone sculpture, pottery forms, Description of find spots — Chandra ketugarh, Tamluk, Mahasthangarh, Bangarh etc. Style and its special leanings. Relation with art of Udaygiri and Khandagiri of Kharavela's time.

Small terractottas plaques : architecture models, narrative plaques showing jatakas, Stories legends, toycarts, plaques, stone sculpture from North and South Bengal.

BENGAL'S INTERPRETATION OF INDIAN CLASSICISM

Chapter : 3

Bengal during the Imperial ascendancy of the Guptas. Social basis of the rise of Gupta art style and its eastern sub-school at Nalanda — Indebtedness of Bengal style to gupta style — methods of re-orientation and absorption.

Description of sites and find spots — classical style temples of South-West Bengal at Purulia — Bankura — Midnapore — Burdwan and the question of Orissan influence on this artistic monuments. Special Reference of Barakar Group of temples and temples in Purulia area (e.g. Deulghata).

Gupta style in Bengal sculpture — North Bengal (Rajsahi, Malda Museums etc.) — Points of departure from Northern India — Chirati (Raktamrittika — Rangamati). Bangarh. Mahasthan garh Paharput (Partly).

PALA STYLE : BIRTH & CRYSTALLYSATION

Chapter : 4

Bengal in post-gupta period — Harsha-Sasanka Cultural renaissance — social conditions — other art forms — Literature — expression in find arts.

Sculpture in stone and Bronze — use of Black basalt and other materials — general nature of finds and find spots. Was there more than one regional types of sculpture. Characteristic feature — general of region based. Decorative elements in sculpture.

Sculpture in Terracotta — architectural plaques — Paharpur and mainameti Sculpture in Wood — examples.

Pala manuscript paintings and their importance — style — colour — composition-linework subject matter — material. Artistic evolution. Relation with early murals.

Expansion of Pala style in India & Tibet. Central Asia. Kashmir, S.E. Asia.

Architecture of the Pala period.

DECADENCE OF PALA STYLE : ART OF THE TRANSITIONAL PHASE :

Chapter : 5

Art styles during latter half of 12th century A.D. to beginning of 14th century. Find spots and sites.

Peculiarities of the last phase of the pala style — the so-called Sena style. Possible links with Southern India.

Curious examples of sculpture embodying archaic and folk style of treatment of form and composition. General survey of sculpture.

Traditional paintings of manuscripts — their tendencies — flight of art and artists to Nepal and Himalayan are as — possible influences in Kashmir and central Himalayan hill areas.

Monuments and architectural examples — destruction and absorption.

EMERGENCE OF THE LATE MEDIAEVAL IDIOM

Chapter : 6

Late Mediaeval period — its beginning — cultural contribution of Turko. Afghan period — synthesis in respect of material — style and form.

Architectural monuments of Gaur — Pandua, Hooghly and other parts of Bengal — secular architecture shriness and other places of worship, palaces, forts, ceremonial gateways, bridges etc.

Fusion of native elements and absorption of foreign elements. In building style — in terracotta decoration.

Art of painting — the Bishnupur, Dacca, and other local styles.

Art of Wooden sculpture and related crafts. Metal casting and metal crafts. Turko-Afghan patronage and its importance.

Risc of the Mughal power — mughal architectural influence. — Rajput style and other northern style of painting and their influence on Bengal Art.

THE SECOND DECADENCE

Chapter : 7

State of Bengal during the last phase of Aurangzeb's is rule. Bengal after the death of the Emperor. Bengal's provincial rulers and their cultural background — the patrons of art of crafts.

Dacca and Murshidabad as centres of art. The development of the provincial styles of painting. Evaluation of the co-called Murshidebad style in relation to the style of Patna etc.

EFFECTS OF EUROPEAN CONTACTS :

Chapter : 8

Bengal and the West-reference to early historic contacts — Importance Late mediaeval contacts — Coming of the Portugese, Britishers, Danish, Dutch and french merchants. Inter penetration of influence : Influence of European style and techniques on the arts & arts of Bengal and Bengal's influnce on the art and crafts of Europe. Examples from European countries, specially, France, Holland, Portugal-Spain-Italy and England.

Examples : terracotta temples wood and ivories, metal art and crafts, textiles paintings.

Coming of the European Artists in Bengal : Daniell, D'Oyly Orene, Say and others and their influence.

European patronage of the traditional Indian painters for scenes of daily life and objects of nature and art.

European elements in Bengal Architecture.

Found of Art School in Western style at Calcutta — first group of students and their work etc.

ART OF BENGAL RENAISSANCE

Chapter : 9

National urges of Bengal's intllectuals during the second half of the 19th century. Nabagopal Mitra and Hindu Male. Work done by P.C. Mukherjee. T.K. Mukherjee, Rajendra lala Mitra, Manomohan Ganguli etc. and their effect on the re-evaluation of the intrinsic worth of Indian art and Bengal's early achievements.

Book written by Smith and E.V. Havell. Parcy Brown etc.

Tagores and Indian Art. Art of Abanindranath Tagore and his school — Contacts with Sister — Navedita — Nandadulal Bose and other followers of Bengal school.

Patronage of Bengal school by nationalist movement — Ramanada Chatterjee and Bengal School.

AFTERMATH OF BENGAL SCHOOL

Chapter : 10

Art of Western style and its co-extension with the revivalist Bengal School. The individual contribution of painters and artist of working in western style :

Art of Gaganendra Nath — a remarkable departure —

BENGAL ART BEYOND THE CONFINES OF BENGAL

Chapter : 11

Expansion of Bengal's style during late-classical or post–gupta period. Bengal and Tibetan art painting, wood work, metal sculpture calligraphy.

Bengal art in Burma painting relief sculpture, in the round overall architectural form — special examples from ancient Pagan. Culture-contacts between Bengal & Burma.

Bengal and Indonesian and Malayasian areas — culture contacts in respect of art and architecture — with special reference to central Java, Bali.

Bengal and the Thai and Vietnam peninsula with special reference to the art of Khmerr, Ayathia, Mi-son, Angkor and other notable sites.

Bengal and ceylon art contacts.

Influence of Bengal on the art of Himalayan prinipalitic — Nepal, Kumaon — Garhwal — Jammu, Chamba-Kulu — Kashmir and Ladakh etc.

Art of Bengal with special reference to the art of Eastern India — Bengal & Assam Bengal and Urissa — Bengal and the middle gangetic Valley of northern India.

Bengal's contribution in the Mughal of Rajput art & architecture.

Tribal Elements in the Art and architecture of Bengal :

Reference to Bengal tribes in epic & early historic liteature's of ancient India. Where to look for tribal features and influences. The art of the early historic period and its derivative from tribal or primitive sources — with special reference to Paharpur architecture plaques.

Primitive and tribal elements in Pala art — art of the South-West Bengal — Tripura etc. Tribal dements in Bengal folk art and craft.

Existing elements — finds on arreas of further investigations.

Illustration :

অধ্যাপক সন্তোষ কুমার বসু মহাশয়ের নামে এই সংখ্যাটি উৎসর্গ করার সিদ্ধান্ত হয়েছে, আমি আমার সহকর্মীদের কাছে কৃতজ্ঞ।

এই প্রকাশনার জন্য আমরা ঋণী মাননীয় উপাচার্য মহাশয়, অধ্যাপক ড: আশীষ ব্যানার্জী, সহ উপাচার্য (শিক্ষা) মাননীয় অধ্যাপক ড: সুরঞ্জন দাস এবং সহ উপাচার্য (অর্থ) মাননীয় অধ্যাপক ড: তপন কুমার মুখোপাধ্যায় মহাশয়ের কাছে। আমরা বিশেষভাবে ঋণী অধ্যাপক ড: ধূর্জ্জটি প্রসাদ দে, সচিব, কলা-বাণিজ্যর কাছে। এই পত্রিকাটিতে অসাবধানতা বশত: যদি কোন মুদ্রণ প্রমাদ বা যদি কোথায় অন্য কোন ত্রুটি থাকে তার জন্য আমি ক্ষমা চেয়ে নিচ্ছি।

এই প্রকাশনার জন্য কলকাতা বিশ্ববিদ্যালয়ের মুদ্রণ বিভাগের সুপারিণটেনডেন্ড শ্রী প্রদীপ কুমার ঘোষের কাছে আমি বিশেষভাবে কৃতজ্ঞ। এছাড়াও এই প্রকাশনার কাজে আমাকে বিশেষ ভাবে সাহায্য করেছেন সংগ্রহশালা বিজ্ঞান বিভাগের শ্রী প্রদীপ কুমার মণ্ডল, শ্রীমতী সতী ভট্টাচার্য, শ্রী দিলীপ কুমার অধিকারী ও শ্রী অমর দাস। আমি সকলের কাছে কৃতজ্ঞ।

শচীন্দ্রনাথ ভট্টাচার্য

বিভাগীয় প্রধান

সংগ্রহশালা বিজ্ঞান বিভাগ

কলিকাতা বিশ্ববিদ্যালয়

প্রয়াত অধ্যাপক সন্তোষ কুমার বসুর স্মরণে

অধ্যাপক সোমনাথ ভট্টাচার্য্য

সংগ্রহশালা বিজ্ঞান বিভাগের প্রয়াত (ফ্রে: ১৯৯১) অধ্যাপক সন্তোষ কুমার বসু ছিলেন ঐ বিভাগে আমার সহপাঠী, সহকর্মী এবং বন্ধু। সুখে-দুঃখে, আনন্দে-বিষাদে, আলাপে-বিবাদে আমি তার সঙ্গে দীর্ঘ বত্রিশ বছর কাটিয়েছি। আমরা সংগ্রহশালা বিজ্ঞান বিভাগের প্রথম ব্যাচের (১৯৫৯-১৯৬১) ছাত্র। নোতুন বিভাগ। পুরনো সিনেট হলের সংলগ্ন পিছনের একতলা অংশটির কয়েকটি ঘর নিয়ে গড়ে উঠেছিল কলকাতা বিশ্ববিদ্যালয়ের আশুতোষ মিউজিয়ম (১৯৩৯)। সেখানেই সামান্য পরিসরে খান তিনেক ঘর (ল্যাবরেটরি সহ) গড়ে উঠল মিউজিওলজি বিভাগ (১৯৫৯) সংগ্রহশালার অধ্যক্ষ অধ্যাপক দেব প্রসাদ ঘোষের ঐকান্তিক চেষ্টা এবং বিশ্ববিদ্যালয় মঞ্জুরী কমিশনের অর্থানুকুল্যে। ছাত্র-ছাত্রীর সংখ্যা দশ, সকলেই কলা অথবা বিজ্ঞানে এম. এ বা এম. এস. সি পাশ। বেশির ভাগই ইতিহাস, বিশেষ করে প্রাচীন ভারতীয় ইতিহাস ও সংস্কৃতে এম. এ. অথবা নৃ-বিজ্ঞানে এম. এস. সি.। একজন ছিলেন ইংরাজিতে এম. এ. এবং অধ্যাপক। আর একজন রাষ্ট্র বিজ্ঞানে এম. এ. সহগ্রন্থাগার বিজ্ঞানে ডিপ্লোমাপ্রাপ্ত। শেষোক্ত জনই হলেন সন্তোষ কুমার বসু। ঐ দুজনকে নিয়ে সকলের মধ্যে একটু গুঞ্জন উঠেছিল। সংগ্রহশালার সংগৃহীত বস্তু, বস্তু সংরক্ষণ বা তৎসংক্রান্ত ব্যাপারের সঙ্গে সংযোগ নেই এমন বিষয়ে উচ্চ শিক্ষাপ্রাপ্ত ব্যক্তি মিউজিওলজি পড়ে কি করবে? প্রসঙ্গত জানিয়ে রাখি সেই সময় মিউজিওলজিতে ভর্তির ন্যূনতম যোগ্যতা ছিল যে কোনও বিষয়ে এম. এ. অথবা এম. এস. সি.। আমরা রঙ্গ করে বলতাম পোষ্ট মাষ্টারর্স কোর্স। কোর্সটি ছিল দুবছরের ডিপ্লোমা কোর্স, হাজার নম্বরের, যার মধ্যে দুশো নম্বর বরাদ্দ ছিল সংগ্রহশালার সঙ্গে সম্পর্কিত যে কোনও বিষয়ভিত্তিক গবেষণা পত্র রচনা। কোর্সের শেষে পরীক্ষার আগে সেই গবেষণা পত্রটি জমা দিতে হোত। সন্তোষের গবেষণার বিষয় ছিল সংগ্রহশালায় সংগৃহীত বস্তু প্রদর্শনের করণ-প্রকরণ, ছাত্রাবস্থায় বামপন্থী রাজনীতি করে আসা একজন যুবকের মানসিকতা খুব স্বাভাবিক কারণে মনে করত সংগ্রহশালাকে মানুষের কাছে পৌঁছে দিতে গেলে সংগ্রহশালায় বস্তু প্রদর্শনের সেকেলে পদ্ধতির পরিবর্তন দরকার, নোতুন পদ্ধতিতে মানুষের কাছে পৌঁছতে হবে সংগ্রহশালাকে। সত্তরের দশকে বিড়লা সংগ্রহশালা ও সি. এস. আই. আর এর তত্ত্বাবধানে যে সব সংগ্রহশালা গড়ে উঠেছিল সেগুলির মধ্য দিয়ে সন্তোষের গবেষণার মূল প্রতিপাদ্য বিষয়গুলি কার্যকরী ভাবে প্রযুক্ত হতে শুরু করল। বিষয় ভিত্তিক প্রদর্শনী, বস্তু পরিচিতি, চিত্র, ফটো, মানচিত্র, রেখাচিত্র প্রভৃতি সহ প্রদর্শনীকে দর্শকের কাছে সহজবোধ্য করে তোলা, প্রদর্শনী কক্ষে দেখা ও পড়ার মত আলোর ব্যবহার, প্রদর্শনীর সঙ্গে দর্শকের সক্রিয় সংযোগ সৃষ্টি, নানান অনুষ্ঠানের মধ্য দিয়ে দর্শকদের উৎসাহ বর্দ্ধন, সংগ্রহশালার মধ্যে পরিচ্ছন্ন খাবার ও পানীয় জলের ব্যবস্থা করা, সংগ্রহশালা কক্ষের বাহিরে একটু খোলা মেলা স্থানে গাছ ফুল, লতা, গুল্মের মধ্যে চোখ ও নিঃশ্বাসের আরাম খুঁজে নেবার ব্যবস্থা করে দেওয়া এবং ভ্রাম্যমান প্রদর্শনী ও ছোট ছোট মিউজিয়ম সার্ভিস সেন্টার গড়ে সংগ্রহশালাকে একেবারে মফশল শহরে ও গ্রামে গঞ্জে নিয়ে যাওয়ার প্রবণতা সৃষ্টির প্রাণ পুরুষ ছিল সন্তোষ। লাইব্রেরী সাইন্স পড়ার পর সন্তোষ গ্রন্থাগার পরিষদের মাধ্যমে গ্রন্থাগার আন্দোলনের সঙ্গে যুক্ত হয়ে পড়ে এবং তারই প্রভাবে সন্তোষের মনে হয়েছিল সংগ্রহশালাকে মানুষের কাছে নিয়ে যেতে হলে সংগ্রহশালার সংগৃহীত বস্তু ও তৎসংক্রান্ত তথ্য এবং সংগ্রহশালার কাজকর্ম মানুষকে জানাতে হবে সংগ্রহশালার মধ্যে বাহিরে এবং স্কুল কলেজের সঙ্গে সংগ্রহশালার সংযোগ স্থাপন করে। গ্রন্থাগার বিজ্ঞানে শিক্ষিত হওয়ার সন্তোষ বসু সংগ্রহশালা বিজ্ঞান বিভাগে

ছাত্রাবস্থা থেকে আশুতোষ সংগ্রহশালা এবং সংগ্রহশালা বিজ্ঞান বিভাগের নিজস্ব গ্রন্থাগার দুটির·গ্রন্থ সম্ভার বাড়িয়ে তোলার কাজে নিজেকে স্বেচ্ছায় যুক্ত করেন। তার সঙ্গে কলকাতার নামী দামী পুস্তক প্রকশন ও বিপনন সংস্থার সহৃদয় যোগাযোগ ছিল। বিভিন্ন সূত্র থেকে বিদেশে প্রকাশিত সংগ্রহশালা বিদ্যা, শিল্প বস্তু সংরক্ষণ সংক্রান্ত বই পত্র বিভিন্ন সংগ্রহশালা ও প্রদর্শনী বিষয়ক ক্যাটালগ, শিল্প-ইতিহাস, প্রত্নতত্ত্ব ও প্রত্নবস্তু চর্চা সংক্রান্ত বই পত্র ও পত্রিকা এমন কি নৃ-তত্ত্ব বিষয়ক গ্রন্থাদি পুস্তক বিপনন সংস্থা যেমন ওরিয়েন্ট লংম্যান, অক্সফোর্ড প্রকাশনী, রূপা প্রভৃতি মারফৎ বিদেশী প্রকাশনা আনানোর কাজে তার উৎসাহ ছিল প্রবল। তার চেষ্টায় বহু বই ও পত্রিকা আশুতোষ সংগ্রহশালা অথবা বিভাগীয় গ্রন্থাগারে আনা হল। ছাত্র-ছাত্রী গবেষক ও অধ্যাপকদের নজরে আসতে থাকল সেই সব বই ও পত্রিকা। এই কাজে সন্তোষের অপরিসীম উৎসাব কলকাতার সংগ্রহশালা গুলিকে সমৃদ্ধ করল। তার অকাল মৃত্যু কলকাতার সংগ্রহশালাগুলিতে গ্রন্থ তথ্য সংগ্রহের সহজ পথটিকে অবরুদ্ধ করে দেয়। সন্তোষের মাধ্যমে পুস্তক বিক্রেতা প্রকাশকেরা যেমন পুস্তক সরববাহের একটি নোতুন ক্ষেত্র পায়, তেমনি সংগ্রহশালা কর্তৃপক্ষ প্রয়োজনীয় সদ্য প্রকাশিত দেশী-বিদেশী বই, পত্রিকা সংগ্রহে উৎসাহী হয়ে উঠল। উভয় দরজায় ছোটাছুটি করে উভয়ের সঙ্গে সংযোগ রক্ষার কাজটি করে দিত সন্তোষ, সোৎসাহে, স্বেচ্ছায়। এই প্রসঙ্গে বলে রাখি সন্তোষ তার সারাজীবনের ও সংগৃহীত গ্রন্থভাণ্ডার মিউজিওলজি বিভাগকে দান করে যায় মৃত্যুর প্রায় এক দশক আগে। সে নিজে যেমন নামী দামী বই কিনত, অন্যকেও বই সংগ্রহে উৎসাহিত করত, এমন কি ছাত্র ছাত্রীদেরও।

সন্তোষের আরেকটি গুণের কথা বলি। আশপাশের সকলকে দিয়ে কিছু না কিছু লিখিয়ে নেওয়া এবং সে গুলি বিভিন্ন পত্র-পত্রিকায় প্রকাশের ব্যবস্থা করে দিত সে নিজে। অরুণ মুখোপাধ্যায়ের ‘চতুষ্কোন’ নন্দ গোপাল সেনগুপ্তের ‘সমকালীন’, গন্থাগার বার্তা, হেড মাষ্টার্স এ্যাসোশিয়েশনের জার্নাল, ক্যালকাটা রিভিয় প্রভৃতি পত্রিকায় ইংরাজি ও বাংলায় বহু প্রবন্ধ ষাট-সত্তরের দশকে প্রকাশিত হয়। এমনকি শেযোক্ত দুটি পত্রিকায় মিউজিওলজির উপর বিশেষ সংখ্যা বার করে বাংলার শিক্ষক, অধ্যাপক মহলকে সংগ্রহশালা ও সংগ্রহশালা বিজ্ঞান সম্বন্ধে অনুসন্ধিৎসু করে তুলতে উদ্যোগ নেয় সন্তোষ। অধ্যাপক কল্যাণ গঙ্গোপাধ্যায়ের পথ অনুসরণ করে সন্তোষ নিজে যেমন বাংলায় অনেক নিবন্ধ এবং কিশোর পাঠ্য রচনা লিখেছে এবং প্রকাশ করেছে তেমনই অন্যকে বাংলায় সংগ্রহশালা বিদ্যা, শিল্প ও প্রত্ন বস্তু সংরক্ষণ, প্রত্ন তত্ত্ব ভারতের শিল্প, প্রত্নতাত্ত্বিক লোকশিল্প প্রভৃতি সংক্রান্ত নিবন্ধ রচনায় উৎসাহিত করত, নিত্য তাদের কাছে জানতে চাইত লেখা কতদূর এগোলো এবং প্রয়োজনে প্রকাশনার ব্যবস্থা করে দিত। ‘সাহিত্য লোক’ প্রকাশনা সংস্থার কর্ণধারকে উৎসাহিত করে আশির দশকে অধ্যাপক দীনেশ সরকার, দেবপ্রশাদ ঘোষ প্রমুখ বিদগ্ধ জনের প্রকাশিত ও অপ্রকাশিত বাংলা ও ইংরাজি প্রবন্ধ (নিজেই অনুবাদ করে দিয়ে) ক্ষুদ্রকায় সুলভ মূল্যে প্রাপ্ত গ্রন্থের প্রকাশের ব্যবস্থা করে। কথা শিল্পী এবং ‘সুবর্ণরেখা’ প্রকাশনা সংস্থা দুটিকে সন্তোষ এই ব্যাপারে উৎসাহিত করে তোলে। সন্তোষের আর একটি কৃতিত্ব উনিশ শতক ও বিশশতকের প্রথম দিকের যেমন রামবক্ষ স্যান্যাল, টি. এন. মুখার্জি, অক্ষয় কুমার মৈত্রের ইত্যাদি বিস্মৃত বিদগ্ধ ব্যক্তির রচনা পুণঃ প্রকাশের ব্যবস্থা করে দেওয়া। গ্রন্থাগার থেকে এদের লেখা ছোট বড় প্রবন্ধ, পুস্তক সংগ্রহ ও সংকলন করে সেগুলির পুণঃ প্রকাশ করার ব্যাপারে সন্তোষ কঠিন পরিশ্রম করেছে। অনেক ক্ষেত্রেই প্রাপ্য স্বীকৃতিটুকুও জোটেনি। তাতে অবশ্য তার কোনও দুঃখ ছিল না।

অধ্যাপক সন্তোষ বসুর পড়াশোনার ব্যাপ্তি ও গভীরতা ছিল নজরে পড়ার মতন। মিউজিওলজি বিষয়টি এমনিতেই বহু বিষয় ভিত্তিক কোর্স। সন্তোষ সবকটি বিষয়ের প্রাথমিক এবং বহুক্ষেত্রে ব্যাপক ও গভীর জ্ঞান লাভ অর্জনের চেষ্টা করত। অনেক সময় অনেক সেমিনারে আলোচ্য বিষয়ের উপর তার তথ্য ভিত্তিক জ্ঞানের বিস্তৃতি ও আপাত বিচ্ছিন্ন সূত্র ও তথ্যের গ্রন্থন দেখে শ্রোতৃমণ্ডলী ও গুণীজনেরা অপ্রশংসা হতেন। ক্লাসে ছাত্রছাত্রীরা যাতে বিহ্বল হয়ে না পড়ে সেই জন্য বিষয়ের মৌলিক কাঠামোটিকে ছোট ছোট বোধগম্য বাক্যে বিন্যস্ত করে ব্ল্যাক বোর্ড ভরিয়ে ফেলত। বলত এবার এগুলির উপর ভিত্তি করে তোমরা নিজেরা বিষয়টি লিখে এনে দেখাবে, আমি দেখে দেব।

অধ্যাপক সন্তোষ বসুর পড়ানো সম্বন্ধে কোনও অভিযোগ কোনও ছাত্রছাত্রীকে করতে দেখিনি বা শুনিনি। তবে তারা এস. কে. বি-কে ভয় করত তার শাসন, যা ছিল বহুক্ষেত্রেই ন্যায্য আর বাহ্যিক দর ব্যতিরেক ব্যবহারের জন্য। এমনও শুনেছি যে উৎসাহী ও জ্ঞানলিপ্সু ছাত্র ছাত্রীদের বলত 'ছুটির দিনে সোজা আমার বাড়ি চলে আসবে, আমার লাইব্রেরীতে এসে পড়াশোনা করবে, তখন তোমাদের যা পারি সাহায্য করব, কিন্তু নোট চাইবে না, দিতে পারব না। নিজেরা লেখা পড়া করে নোট তৈরী করে নেবে। আমি দেখে দেব।" বিনিময় মূল্য বইয়ের ধুলো ঝেড়ে দেওয়া, মলাট লাগিয়ে দেওয়া, ঠিকমতো আলমারি ও ব্যাগে বই সাজিয়ে দেওয়া। সত্যি কথা বলতে কি বাড়িতে স্যারের খোলা মেলা ব্যবহারে, খাওয়ানোর ব্যবস্থাপনায় তারা মুগ্ধ হয়ে যেত। সন্তোষের মাথায় ঢুকলো সংগ্রহশালা বিদ্যার অনেক বিষয় আঁকাজোকা না করে বোঝালে সহজে বোধগম্য হয় না। ব্যাস্, সন্তোষ ফ্রি হ্যাণ্ড ড্রয়িং রপ্ত করতে আরম্ভ করল। সেই সময় শৈল চক্রবর্তীকে দিয়ে তার লেখা গুহা স্থাপত্য ও অজন্তা চিত্র কলার উপর কিশোরদের জন্য একটি ছোট বই প্রকাশনার জন্য সেই বই-এর তাঁকে দিয়ে অলংকরণ করাতে ব্যস্ত। সঙ্গে নিজে তাঁর কাছে ড্রয়িং শিখতে শুরু করল। বছর খানেকের মধ্যে সন্তোষ আঁকাজোকায় বেশ পটু হয়ে উঠল। সন্তোষের ক্লাসের পর ক্লাস নিতে গিয়ে দেখি ব্ল্যাক বোর্ড ভর্তি বিভিন্ন যুগের পোড়ামাটির পুতুলের রেখা চিত্র, পাশে পরিচিতি লিপি ও মূল রীতি বৈশিষ্ট্য লেখা। মাঝে মাঝে দুখানা ব্ল্যাক বোর্ড লাগিয়ে ক্লাস নিত। একখানায় স্থান সংকুলান হয়না বলে। ক্লাস নিয়ে ফিরলে দেখা যেত ওর জামা কাপড় সর্বাঙ্গে চকখড়ির গুড়ো। দোকান থেকে প্রচুর পোষ্টার বোর্ড কিনে এনে সন্তোষ তাতে সংগ্রহশালা বিজ্ঞানের মূল বিষয়গুলি সচিত্র করে এক ঝলকে বোঝার মত করে তুলল। এ রকম কিছু পোষ্টার নিজেই বাঁধিয়ে মিউজিওলজি বিভাগের বিভিন্ন জায়গায় টাঙ্গিয়ে দিল। অবশ্য তলায় লেখা কপিরাইট সন্তোষ বসু। বস্তুর পরিচিতি লিপি লেখার কলা কৌশল লেখানোর জন্য ছোট ছোট প্লাই বোর্ডের উপর বিভিন্ন ধরণের লেবেল তৈরী করতে শুরু করে সেগুলি বিভাগের পাঠ সহায়ক উপকরণ করে তুলল। নানান ধরণের কাগজ কাগজের বোর্ড, কাঠ কাঠের বোর্ড, বোর্ড পিন, কাঁচ, ফ্রেম, কলম, তুলি, পেন, পেনসিল প্রভৃতির ছোট বড় টুকরো সংগ্রহ করে বিভাগীয় আলমারিতে রাখতে শুরু করল। পরে দেখি সেগুলি নিয়ে ক্লাসে ঢুকত ছাত্রছাত্রীদের সে সব জিনিস চিনিয়ে সংগ্রহশালার কোন কাজে কোন জিনিস কখন কিভাবে ব্যবহার করতে হয় ছাত্রছাত্রীদের শেখাতে শুরু করে দিয়েছে। কোথাও কোন সংগ্রহসালায় প্রদর্শনী কক্ষ সাজানোর দায়িত্ব নিলে সঙ্গে করে ছাত্রছাত্রীদের নিয়ে যেন—হাতে কলমে কাজ শেখানোর উদ্দেশ্য। আশুতোষ সংগ্রহশালা, গান্ধী স্মারক সংগ্রহশালা, শিপ বিল্ডিং কর্পোরেশনের সংগ্রহশালা (এখন ভেঙ্গে ফেলা হয়েছে) ও গুরুসদয় মিউজিয়ম (প্রথম পর্বে) জুট রিসার্চ ল্যাবরেটরির মিউজিয়ম জি. পি. ও.-র ফিলাটেলিক সংগ্রহশালা (এখন যে সংগ্রহশালাটি আছে সেটি নয়), স্মলস্কেল ইন্ডাস্ট্রিজের সংগ্রহশালা, ইন্সটিটিউট অব পাবলিক হেলথ্ অ্যাণ্ড হাইজিনের সংগ্রহশালার প্রদর্শনী কক্ষ সাজানোর ব্যাপারে সন্তোষের পরামর্শ, সহায়তা, এমন কি হাতে কলমে কাজ করে (গত শতকের ষাট-সত্তরের দশকে) সংগ্রহশালাগুলি কম খরচে সুবিন্যস্ত সালোকিত ভাবে গড়ে তুলতে সন্তোষের অবদান অনস্বীকার্য। যাঁরা সে সাহায্য ও পরামর্শ নিয়ে ছিলেন তাঁরা আজ জীবিত থাকলে আমার কথার সত্যতার সাক্ষ্য হতেন। এ ছাড়াও সি. এস. আই. আর. পরিচালিত ইনষ্টিটিউট অব সিরামিক টেকনোলজির ভারতীয় সিরামিক সংক্রান্ত স্থায়ী প্রদর্শনীটি সন্তোষবাবুর তত্ত্বাবধানে তৈরী হয়। তারাপদ সাঁতরা দায়িত্ব নেবার আগে থেকেই অমল গাঙ্গুলির অনুরোধে বাগনানের নবাসনে আনন্দ নিকেতন কীর্তিশালার কাঁচা বাড়ীর (বীরভূম থেকে লোক আনিয়ে সেই গ্রাম্য স্থাপত্যের কুঁড়ে ঘরটি তৈরী করা হয়েছিল) প্রদর্শনী কক্ষগুলি সন্তোষবাবুই সাজিয়ে দেন স্থানীয় কাঠ বাঁশের আসবাব পত্তর তৈরী করিয়ে ভবানী সেনগুপ্ত মহাশয় যখন তমলুক সংগ্রহশালা গড়ে তুলছেন তখন সন্তোষ তাঁকে সব রকম সাহায্যের হাত বাড়িয়ে দেয়। বস্তু সংগ্রহ, সংরক্ষণ, প্রদর্শন, বস্তু পরিচয় লিপি তৈরী, ক্যাটালগ্ প্রকাশ প্রভৃতি। একই ভাবে বারুইপুরে যখন হেমেন মজুমদার মহাশয় দক্ষিণ ২৪ পরগণা আঞ্চলিক পুরাতত্ত্ব সংগ্রহ শালাটি তৈরী করার উদ্যোগ নিয়েছেন তখন থেকেই সন্তোষ ঐ সংগ্রহশালা গড়ে তোলার ব্যাপারে হেমেনবাবুকে সব রকম

সাহায্যের হাত বাড়িয়ে দেন। সন্তোষ মৃত্যুর আগে পর্য্যন্ত কাজ করেছে এবং একাধিক ছাত্র সতীর্থদের সে কাজের সঙ্গে যুক্ত করে দিয়েছে।

সন্তোষের সাংগঠনিক ক্ষমতা এবং বহু ব্যক্তি ও সংগঠনকে কোনও একটি মঞ্চে সংগঠিত করার দক্ষতা নিষ্ঠা ও উদ্যম ছিল প্রশংসনীয়। ভারতে প্রথম আঞ্চলিক সংগ্রহশালা ও সংগ্রহশালার পৃষ্ঠ-পোষকদের সংগঠিত করে যে ওয়েষ্ট বেঙ্গল মিউজিয়মস্ অ্যাসোশিয়েশন গড়ে ওঠে ষাটের দশকের মধ্যভাগে এবং বাংলার গ্রামীন সংগ্রহশালা পর্ষৎ যেটি সত্তরের দশকের মধ্যভাগে গঠিত হয় দুটিরই প্রধান উদ্যোগী পুরুষ ছিলেন অধ্যাপক সন্তোষ বসু। ঐ দুটি সংস্থা গড়ে তুলতে কী অপরিসীম পরিশ্রম করেছিল সন্তোষ তার পুঙ্খানুপুঙ্খ সাক্ষী বর্তমান প্রবন্ধকার।

সন্তোষ খুব একটা বাংলা ছেড়ে বাহিরে যেতে চাইত না। দু একবার সেমিনার উপলক্ষ্যে এদিক-ওদিক গিয়েছিল। হঠাৎ শোনা গেল সন্তোষ বিহারের মিথিলা অঞ্চলে কি যেন কাজে যাবে। গেল এবং ফিরে এলো। ও সঙ্গে নিয়ে এলো এক বাণ্ডিল মিথিলা চিত্র এবং সে অঞ্চলের তত্ত্ব হাঁড়ি থেকে নানা রকমের মাটির কাজ। যেগুলি এখন আশুতোষ সংগ্রহশালার অমূল্য সম্ভার। এরকম ঘটনা ঘটেছিল আরেকবার। সেবার বস্তার অঞ্চল থেকে সন্তোষ সংগ্রহ করে আনল পোড়া মাটির পুতুল, ডোকরার কাজ।

খুব কম লোকই জানত যে সন্তোষ খুব নিষ্ঠা সহকারে পারসী ভাষা শিখেছিল প্রথমে ডঃ চিন্তামণি দত্তের কাছে, পরে ইরান সোসাইটিতে। ব্রাহ্মী লিপিও কাজ চালানোর মত পড়তে পারত।

বিভিন্ন পত্র পত্রিকার ছড়িয়ে ছিটিয়ে থাকা এবং কিছু অপ্রকাশিত লেখার অসমাপ্ত তালিকা আমার কাছে আছে। তার থেকে কিছু প্রবন্ধের উল্লেখ করে এই নিবন্ধ শেষ করব।

Recent Archaeological Finds in Tamluk, **Lalit Kala Academy**, Bangla Desh, 1971.
অক্ষয় কুমার দত্তের জীবন চর্চায় সংগ্রহশালার স্থান, সমকালীন, জুলাই ১৯৭৫।
ত্রৈলোক্যনাথ একটি অবহেলিত অধ্যায়, ১৯৭৭; রামব্রহ্ম স্যান্যাল, চতুষ্কোন।
Terracotta as Archaeological Embellishment, **B.E. College Souvenir.**
সংগ্রহশালা বিজ্ঞান : বর্গীকরণের কয়েকটি সমস্যা, গ্রন্থাগার, বিশেষ সংখ্যা ১৯৬৭-৬৮।
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মুর্শিদাবাদের লোক শিল্প, মুর্শিদাবাদের লোকসঙ্ঘের পত্রিকায় প্রকাশিত।
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শুনেছিলাম মৃত্যুর আগে সন্তোষ একটি স্বরচিত্ত বই প্রকাশে ব্যস্ত। অসুস্থ শরীর নিয়ে সে ছোটাছুটি করছে। সেই বইটি হল ভারত শিল্পে দেহজ শ্রম ও অন্যান্য প্রবন্ধ। ১২ই ফেব্রুয়ারী ১৯৯১ সকালে আকস্মিক খবর পেলাম বন্ধুবর সন্তোষ আর আমাদের মধ্যে নেই। যা ভাবিনি তাই ঘটল। জীবনের সকল প্রাপ্তি অপ্রাপ্তির বাহিরে চলে গেল সন্তোষ।

সংক্ষিপ্ত জীবনী পঞ্জী

জন্ম : ২৫শে ভাদ্র, ১৩৪০ বঙ্গাব্দ, ১০ই অগাষ্ট ১৯৩৩।

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মিউজিওলজি বিভাগে ছাত্র কাল ১৯৫৯-১৯৬১।

মিউজিওলজি বিভাগে অস্থায়ী শিক্ষকপদে বৃত হন ৮ই নভেম্বর ১৯৬২।

আশুতোষ সংগ্রহশালার গবেষক পদে বৃত হন ১১ই মার্চ, ১৯৬৩।

মিউজিওলজি বিভাগে অস্থায়ী পূর্ণ সময়ের অধ্যাপক পদে বৃত হন ২রা জুলাই, ১৯৬৩।

পরবর্তী কালে রীডার এবং প্রফেসর পদে উন্নীত হন যথাক্রমে আশি ও নব্বইয়ের দশকে প্রারম্ভিক বছরে।

FOLK ART AND CRAFTS OF BENGAL : HISTORICAL EVALUATION

Professor Santosh Kumar Bose

Folk art and crafts constitute the visual expression of a people's mind. Folk art of today could be fruitfully studied by a comparative analysis of contemporary folk art with examples of art objects belonging to past ages. In this paper an attempt has been made to show how the art forms from the past passess striking affinity to the present day folk forms.

Clay is the traditional medium of art in Bengal. From the prehistoric *Pandurajar Dhibi* we come across a male head of primitive character with a conical headgear and eyes and other features of the face done in applique. If we study it carefully, we shall find its affinity with the present terracotta dolls of more primitive character. Female figures with a cylindrical torso is a type of folk object which continued through the ages. Dolls of this class with bird-like facial features are found in different parts of Bengal and adjacent areas of Assam. They are usually associated with the mothergoddess cults and are sometimes shown as carrying children in their laps. Ancient terracottas from Bengal, belonging to the Sunga-Kushan period are also important for the study of folk art. In one example from Chandraketugarh we come across a couple riding a tiger under the typical double-storied, thatched temple structure. While studying the present cult of the tiger-god, we may refer to this interesting object belonging to a remote historical period.

In the archaeology of Eastern India the motif of the peacock and the snake is wide-spread, and we find the existense of this motif in different media like temple terracotta, textile design, wood crafts of the contemporary period. The peacock, snake and the fish decorations on pottery from *Pandurajar Dhibi* started this tendency which continued to the present day.

If we want to study wood craft of folk character we shall find that these are hisotirically related to early and late-mediaeval terracottas of Bengal. For example, the c.11th century wooden panel, collected a few years back by the Dhaka Museum, seems to be related to the stone sculpture of the Pala period with a nayika carrying a parakeet shown below a trifoil arch surmounted by a shikhara ending in a typical āmalaka. Next to it we are also impressed by the similarity between the corner decorations of a late-mediaeval Bengal temple with 'Varshā' decorations at the corners of wooden temple-cars from different districts of Bengal. This type of study could be extended to the placement of panels on temple walls in terracotta and the position of panel decorations of wooden temple doors.

Folk painting of Bengal also brings out intersting points. The arrangement of the Pata panels and the panels depicted on early stupa railings is too well-known to be repeated again. Some

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Former Professor and Head, Museology Department, Calcutta University typical scenes shown in such panels like Jatayu fighting Rāvana possess identical compositional quality with temple terracotta panels showing the same scene.

Here we may venture to point out that a deep insight about our scroll painting could be gained if we compare painted wooden manuscript covers from Bankura depicting Ramalila or Krishnalila. The path of true study of folk painting must take into account the unity of the basic conceptual representatiorn of a typical panel of temple terracotta, a scroll panel, and finally, the simplified and bold Kalighat drawings, showing e.g. Raslila, Setubandhana and enthronemental of Rama.

For the study of Bengal folk art we can hardly ignore the pottery forms. It must be noted that the contemporary Manasāghat, the ritualistic representation of Dakshinrāy or Banbibi and the Eosarā are all based on the basic form of an earthen pitcher standing in the usual manner or upturned. There we may refer to different archaeological finds from Tamluk showing grotesque faces probably representing some kind of folk deity. From sites like Bangarh, Paharpur and Mainamati we come across primitive type of ritual figurines with cylindrical body and crudely made limbs. The Votive thanks with female figures also known from historic sites probably representing matrikas and explained by scholars as having some connection with the Punnipukur vrata. Similarly the early pot-bellied yakshas and the present day pot-bellied male and female dolls are example of folk element which continued through time. From archaeological sites in lower Bengal we come across hollow pottery elephants and pot lids with snake hoods.

The study of textiles of Bengal open up a vast field for comparative historical evaluation. In the Pala manuscript paintings and some stone sculptures we find the deity covered with designs and motifs which strikingly resemble the designs of later texiles in horizontal and diagonal orientation. If we look attentively to the panel designs on the anchala of the Baluchari sarees we shall find that they bear a strking likeness to late-mediaeval temple terracotta panels and panels in ivory relief work. The central flower or lotus designs on the embroidered quilt or 'Kānthā' make us conscious about the existence of conventional lotuses found in various art forms of Bengal. The border-panels of Kanthas, the primitive type of animal figures on its ground could also be studied from this standpoint.

The glory of Pala stone sculpture should not be forgotten. The typical Bengal rampant lion as found in the contemporary metal craft are related to similar figures in early stone and bronze sculptures. The Prabhā of the stone & bronze icons similarly make us aware of the basic connection between historical art and folk art. The gradual simplification of modelling of Krishna and Durga images of the later period could also be studied in relation to historical context.

Much of the present day pottery and metal household utensils are related to earlier hiscorical forms. The Deepalakshmi, different kind of lamps and lampstands, bell, watersprinkler, betel nutcrackers took their present day form from traditions of the past, the exquisite dhokra metal crafts embodying zoomorphic shapes and stylised bowls for measuging rice are significantly related to basketry craft and crafts based on other perishable materials.

The study of folk art and crafts of a ragion should not be limited to contemporary only. We must realize that for the study of the traditional features it is always necessary to mention the historical background and antecedents. Folk art is a field in which a joint venture by the archaeologist and the folklorist is desirable and should be welcome. It is also desirable that the historical art of Bengal, as found in archaeological collections and examples of folk art and crafts available in folk art museums should be carefully surveyed for discovering the overall traditional elements of art in Bengal.

NEED OF AGRICULTURAL MUSEUM IN NATIONAL LEVEL

Sachindra Nath Bhattacharya

Planning of Agricultural Museum is necessary to project the idea of agriculture and its development in different historical periods of human life through museums. The origin of agriculture could be traced to the early human attempts at settling down in congenial environments and gradually exploiting the animal and plant resources which were found easily accessible. Agriculture from the dawn of civilization covers an important part of human life. From Indus Valley Civilization, agriculture and agricultural practices are of important concern of the human population. From the history elaborate evidences (e.g. paleobotanical evidence, archaeological evidence, evidence from literature etc.) were found in connection with the use of different kinds of agricultural tools implements for preparation of land, sowing, cutting and storage of grains. In course of time population explosion has taken place not only in India but also throughout the whole world and as such the demand and requirements of food grains enhanced substantially. It is obvious that tremendous technological changes (advancement) in the agricultural practices have taken place due to the advancement.

In India amongst others rice is the most important cereal crop and it is important to carry out a detailed study about the origin of agriculture, changes taken place through the ages in agricultural practices and modern concept of agriculture and practices. The author also likes to disseminate the evolution of agricultural practices through museums. There is a scope of setting up regional museums and their branches for effective educational communication to the different sections of people and society so that even the farmers can get some idea to improve their methods of cultivation although there should be a Agricultural Museum in National Level.

To interact the above problem lots of information have been collected and analysed scientifically and some pieces of literature have been consulted to assess the reason of development of agriculture and agricultural practices in relation to the development of social structure and social requirements. Museum can impart knowledge about the recent advancement taken palce in the agricultural practices due to globalisation and also can focus the changes that have been taken place in different historical periods. To communicate effectively about the systematic development of agricultural practices, a museum at least in the National level should be set up immediately. To evolve a suitable educational-communicational methodology and technology extensive work will have to be undertaken. To highlight the problem we are to find out proper museum methods in relation to the evolution of agriculture and agricultural practices.

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It would be better to plan out a model structure of agricultural museum in National Level so that a large number of Indian population can take full advantage of it.

Planning of agricultural museum with special reference to oriza sativa

Agriculture, in the real sense, has always and in every age been the basis of man's life and development and its progress has indirectly influenced even the intellectual and artistic life of the area of country concerned. Although, now-a-days the steady advance of industry and technology seems to mask and induce the importance of agriculture, that impression is not correct. Population increase all over the world are setting over agriculture bigger and more difficult tasks, and these can be met only by applying the achievements of science and technology on an over wider scale. Hence the progress of science and technology means at the same time progress in agriculture.

Today there are many agricultural museums functioning all over the world, and indeed there is hardly a natural history museum of any sort which does not disseminate some agricultural specimens or at least have some connection with agriculture.

At the end of the eighteenth and the beginning of the nineteenth centuriy numerous archaeological, historical and art museums came into being all over the world. In that period no attempts were taken to set up any agricultural museums, because museums, then at the beginning of their history, were largely treasure-houses, into which agriculture, with its simple implements, did not fit. That was the period in which the development of agriculture on scientific basis was beginning, and the endeavour was to employ as many machines as possible, models of which were already kept in many agricultural schools as equipment for teaching.

There can be no doubt that agricultural museums grew out of the world exhibitions which began in 1851 and the national exhibitions which followed them. The material brought together for such exhibitions was in many cases needed as the basis for agricultural museums and collections. In other cases collections came into being alongside colleges, universities or research institutes, and later bacame independent. Less usual are instances in which collections have been assembled at the centre of some large estate, showing in the main articles and documents associated with it.

The main agricultural museums in Europe came into being at the end of the nineteenth and the beginning of the twentieth century, when the great agrarian crisis of the 1870s and 1880s demanded a radical alteration of the structure of agriculture, and when those responsible for agrarian policy reorganised what an important part might be played in this field by exhibitions and by the permanent displays offered by the museums which developed out of them.

The main types of Agricultural Museum

There are museums which deal with the whole of agriculture or with its main branches. Others concern themselves only with some details, and there purpose finally is to display the agricultural collections set up for other purpose. If we include all of these we can distinguish the following main types of agricultural museum and their collections.

Comprehensive agricultural museums, which deal with all, or at least the main important branches of agriculture and the processing of agricultural produces and could try to give an overall picture of the entire agriculture pattern of a country. They are relatively few, of these examples are the agricultural museums of Czechoslovakia, Denmark, Egypt and Hungary. It would be a good thing for the future to further the organisation of such museums or the development of other museums in this direction, because in this way the agriculture pattern of a country may be shown.

Specialised agricultural museums, which collect and exhibit articles used in one or more branches. There are, for example, many museums devoted to forestry or, to the hunting and shooting or game, but there can also be found in various parts of the world independent specialised museums concerned with fishing, viticulture and wine production, horticulture, bee keeping, the rearing of horses and cattle, agricultural implements and many other subjects. These have the advantage that they can show a small field in greater depth, but the disadvantage is that this smaller field can be studied in isolation from agriculture as a whole.

Portions or groups within other museums : There are many museums which contain a section or small division devoted to one branch or another on agriculture. Natural science museums can be regarded as agricultural museums in so far as they reveal and display the past and present of plant and animal species, but they pay less attention to questions of economic exploitation and their bearing on society. Others which may be included are the technical museums and ethnographic collections which study the small-scale undertakings, and in their research they have regard above all to ethnic point of view. Collections of agricultural implements and models (for example the Hohenhein collection) may also be included in this category.

Regional museums, natural history museums, commemorative museums : These are usually have small collections, demonstrating the history of the cultivation and use of one species of plant, for example paprika, cotton, or tea, or dealing with one species of animal or its main breeds or strains. Then there are the commemorative museums set up in honour of some outstanding persons or pioneer in the field of agriculture.

The above museums show at the same time the relative order of importance of the various types of agricultural museum and collection. The work of these institutions, at various levels, is a concern of the International Association of Agricultural Museums, which works alongside ICOM, endeavouring to give help in the most important questions of principle. This was also the purpose of the three international conferences which have been held, in Prague, in Cuttgart-Hohenheim and in Budapest, since the association was formed in 1966. It's periodical, *Acta Museorum Agricultuare*, published in Prague, not only establishes articles on theory and practice, but also tries to maintain appropriate contacts between the members. At present the headquarter of the association is in Copenhagen, and the last international congress met in 1974.**

Museums specialising in the history of rural life and agrarian industry emerged in the last decade of the nineteenth century. Their germinating ground was the great world exhibitions. The material brought together for these events was often the basis for future agricultural collections; also, ethnographical museums often organised at these international exhibitions are presentations of rural and popular culture (e.g. dance performances).

Agricultural museums illustrated the technical progress of the rural industries through the development of new implements and machinery and through new discoveries in plant and animal breeding. They had a distinct technico-pedagogic purpose and became an aid to agricultural

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** Balassh, I, Traditional and historical Agricultural Museums, Vol. 3, 1972. Museum, UNESCO.

teaching. The first museums of this kind – and still the largest – were created in 1890 in Hungary and Czechoslovakia. They were followed by others in Denmark, Egypt, Germany and the United Kingdom. All these museums present more or less the entire national history of agriculture which includes forestry, viticulture, hunting, fishing, apiculture and so forth. It is easy to understand that few successors to national museums of agriculture have appeared in the second half of the twentieth century. Specialised museums describing certain branches of farming, have on the contrary, increased in great numbers throughout the world.

The open-air museums aimed on the basis of a given historical agrarian milieu and methods of cultivation, to bring to life and describe older modes of rural life and culture. These museums have a distinct ethnographic orientation.

In the large agricultural museums, ethnologists and historians soon joined the technicians and natural scientists already on their staffs, while the open-air museums were almost exclusively served by ethnologists. Botanists and zoologists were to be found only exceptionally. Between the two types of museum, however, all researchers have moved unimpeded, for the history of the development of working implements have proved to be a meeting point for ethnologists, technicians and economic historians alike. The foundation of the International Association of Agricultural Museums in 1966 had its interest in implements research, although its journal *Acta Muceorum Agriculturae* actually presents extensive research in agrarian history, agrarian ethnography as well as archaeo-botany, archaeo-zoology and ethno-botany.

The ever greater striving for efficiency in agriculture, with the use of fertilizers and pesticides on the enormous acreages of monoculture, has had marked effects on the enormous acreages of monoculture, has had marked effects on the environment. Often the balance between man and nature has been seriously disturbed. Concern for environmental conservation has thus found a growing number of supporters both in professional circles and among the public at large. The development of cash-oriented agriculture has naturally been accomplished by a drive to improve animal and plant breeds. In the meantime, however, a great deal of knowledge built up during many generations has been lost. While in many countries this knowledge is still alive, where agrarian production is now industrialised, it survives only in the museums or in old handbooks on agriculture.

It is precisely the knowledge of old methods and experiences, however, which appears once again to be necessary. The developing countries have sometimes been aware of the need for ecological adaptation in the introduction of modern agriculture. In the Industralised countries the energy crisis starting in 1973 were a warning signal. A need arose to attempt to regain knowledge about older forms of tillage and, for security reasons, to retain plant species, older kinds of cereals and breeds of domestic animals which until then had seemed less economical There was a keen awareness of the need to retain the abundance of genetic variation that is being manifestly impoverished. During the 1960s and 1970s these interests were backed up by the need to develop practical applications of such 'out-of-date' species and techniques, in the field of plant breeding, corresponding research work has been organised through gene banks which collaborate internationally and a great interest in the preservation of plants threatened with extinction has been demonstrated also by voluntary organisations.

New roles for museums

How have the museums responded to this situation? In general, they have not been clearly enough on stage to present and discuss the changing agricultural scene. Rather, concern for agricultural history, has been shown by scientists and groups such as those who make up the 'green wave', young people who leave the towns and 'return' cultivation as a life-style which turns its back on urbanized and industrialised society.

Organisations have been founded to protect rare breeds or plants threatened with extinction and they have achieved many good results. Because many of them need to meet the public and explain their work, farm parks or other kinds of 'museums' have been set up. Many museums have built upon these safeguard actions in order to present the historical and ecological implications of this preservation work.

In this context it may be said that, at the end of the 1960, the living historical farm movement developed in the United States at the personal initiative of Dr. John T. Schlebecker of the Smithsonian Institution. Today there are about 204 favour, throughout the country. Apart from the aspects described, it should be noted that once the develpment stage has been completed, additional research in these farms is often haphazard and sporadic at best. Without a continuous research programme there is often no verification of new or corrected information for the interpretative programmes. Some work is being done to replicate historic livestock types and to cultivate and preserve hereditary crop varieties. But there is still need for serious research.

In the late 1970s a rare-breed survival organisation also emerged in the United States. This movement actually began in the United Kingdom. In August 1968 the Royal Agricultural Society and the Zoological Society of London set up a working party to advise on the preservation of rare breeds of British farm animals. In 1973 a national organisation called the Rare Breeds Survival Trust was launched. The Cotswold Farm Park is their 'museum', a shop-window for rare-breed conservation, where visitors are told the history of British livestock breeding illustrated with groups of rare breeds and encouraged to support the vital work of ensuring rare-breed survival. It is a farm where breeds rarely seen in these days of commercial hybrids can be observed rearing their young in a farm environment. A few open-air museums in Sweden, too, have joined in the preservation of Swedish rare breeds.

The awareness of the need to retain the abundance of genetic variation emerged from the fact that certain breeds can live on pastures that are unfit for high-bred races. Hardiness and resistance to certain diseases are invaluable characteristics which are easily lost through overbreeding. This can have substantial economic consequences, as was noted by the FAO at an early stage after the introduction of American Lowland cattle in Africa. This breed, unlike the comestic one, was not immune to the testse-fly and the project was a failure.

Some museums, particularly in Scandinavia, have begun an interesting form of collaboration with the international genebanks. Museums in Sweden and Norway run orchards in open-air departments as clone archives under the responsibility of the Scandinavian Gene Bank. In the United States, the horticultural society of Worcester County (Massachusetts) and the open-air museum of old sturbridge village have set up a large preservation orchard for some 150 species of old American apple varieties. Their preservation work is going on apparently independently of any gene bank. The International Association of Open Air Museums under the leadership of Dr. A. Zippelius has also included the preservation of threatened seeds and weeds among its new tasks.

All these activities are but the logical extensions of the preservation goals of museums, which have come to encompass not only artefacts from previous ages but also plants and domestic animals threatened with extinction through the action of man. As sources of instruction, museums must be depositories of information, where the public can learn to understand the vital importance of stemming the impoverishment of nature, its flora and fauna. This fact has been obvious to many organisations outside the museum and that is why 'museums' as shop-windows have developed with this public information goal in view.

Concept of Museum of Agriculture in India

For several years ICCM, through its long range development plans (1969-71) and UNESCO had included in their programmes promotion, establishment and development of agricultural museums as an educational tool for the development of agriculture in the developing and third world countries of the world.

During his tour of Asian countries and his first visit to India in 1966, Bohan, former Director of ICCM, desired that India, a leader in the creation of several new categories of museums and giving impetus to such existing institutions in the developing countries of the world, would also be the first in planning and establishing the museums of agriculture. He recommended the starting of a mobile exhibition on agriculture by the Birla Industrial and Technological Museum and ultimately to open small rural agricultural museums in the areas of intensive agricultural activity. During his second visit to India in 1970, he discussed the plans of a Museum of Agriculture, Himachal Pradesh University (now, Himachal Pradesh Krishi Vishva Vidyalaya) at Palampur, Himachal Pradesh and placed before the ICCM Board, Paris, which by inserting a paragraph in its proceedings, granted in ICCM's professional patronage as a 'Pilot Project for the Developing Countries to study its impact.

Development of Agricultural Museums

With the increasing development and constantly greater variety of specialisation in all the scientific branches and techniques in the 19th century, Museums, too received a much more important mission as compared to previous random collections of objects of interest and historical value. The knowledge that the present has its deep roots in the past led to the intensive study of the historical development of human society and its work. Thus the museum became gradually the study centres especially through their adult education activity and live presentation of the collections.

It is quite understandable that soon the need for such an effective helper for one of the oldest and important branches of human activity in agriculture arose in many places. The relationship between the life of man and production is so close and affects each other to such an extent that the two cannot be separated. However, as a result of the local conditions and the existing possibilites the initial development of agricultural museums did not always take the correct line and even could not be uniform.

Ref. Need and planning – A Museum of Agriculture, – P.D. Sud.

Thus, today we encounter museums of agriculture which deal only in part or exclusively and completely with agricultural production. Yet another category of such institutions are not called agricultural museums and deal only with the life and work of farmers. There also exists a difference in the epochs which these museums study, sometimes the study relates to the total historical development upto the present day, at other times the museums are not interested in the present or again their subject of interest is only the present agricultural production. These differences in programme are based, as has already been mentioned, on local conditions. The common factor, however, is the material objects giving proof of the development of agriculture or its special branches in a wider or more narrow territorial region. There is another category of such museums like those of ethnography, science and technology which keep collections of old agricultural implements or a section on agriculture like the Science Museum, London or Munich Science Museum, Germany.

All existing agricultural Museums can thus be divided according to their programme into four basic groups :

Examplees :

1. Universal Museums	Institutions which deal with total development of agricultural production, including complementary branch.
2. Special Museums	which deal with only one branch of agriculture.
3. Open Air Museums	which deal mainly with documentation of life and work of farmers, peasants and agricultural worker in the past.
4. Ethnographic, Science and Technological Museums	which has old agricultural implements in their collections or has a section on agriculture.

Museums of Agriculture for India and Developing Countries

To begin with museums of agriculture to be planned for India, developing and Third World countries of the world should have a priority to develop universal agricultural museums and rural agricultural museums. This kind of comprehensive museum deals with all or at least a single agricultural of allied field, like horticulture, forestry, animal husbandry etc. These museums should cover not only the present agricultural production but also should survey and portray the past agricultural activities as an essential adjunct of the museum's exhibition programme.

This is more so, because, introduction to new technical methods in a non-industrial society like ours, present two-fold problems :

(a) Technical

1. System	which deals with collection of information on the subject matter of museum and its processing to prepare the details of exhibits and exhibitions.
2. Technique	which deals with the layout and physical aspects of installation including colour and light arrangements.

3. Effect	achievement of desirable results, which is the sum total of system and technique.
(b) Social	since people introduced to alien technology and new techniques in the rudimentary society are sensitive about their own environment, traditions, culture and achievements, before taking any steps to break new grounds to bring change in the attitude of masses, there is need to make provisions in the scheme to educate masses side by side and prepare them mentally for developing scientific attitude and to adapt the application of science and new technology.

Only the willing partnership of masses in this new venture can give positive results, otherwise bad personal relationship will crop up if the introduction given assumes that original technology is outmoded. For demonstrating interest in the original culture and changed technique it is necessary to combine the features of historical and agricultural museums which can deal with productivity during modern times.

This aspect was made the basis of studies at the museum of agriculture from the very beginning of this pilot and pioneering project at Palampur, where mere collections of important objects were made. Then these objects were kept on a permanent display in a small room allotted for the purpose. As a next step these collections of live samples were augmented and permanently displayed with the help of graph and photographs, which were visited by students, farmers and dignitaries from within the state, outside the state and foreign countries and became quite popular, educative and impressive. Here more stress had been on the treatment of subject matter, rather than on technique for want of proper and permanent space, adequate funds and staff.

After making the observations for two years (1978-80) the renovation work of the whole exhibition area has been taken up to rearrange and display the exhibits in a chronological order, making them more comprehensive in their educational message and serve as a master plan for this museum as a permanent feature for years to come. The new and permanent space for the museum is nearing its completion. These exhibits will be given a three dimensional impact with attractive light and colour designs in phases, depending upon the availability of resources in man-power and finance.

History of the concept of agricultural museums in India

Beginning in this direction can be traced to the establishment of Madras Government Museum (1851) which housed the collections of geological specimens and for the purpose of promoting and improving 'Agriculture in the region'. This, however, did not develop in the years to come when it was required most. At present the museum has agricultural products as a part of Economic Products Gallery, a part of the Botany section. The Pudukottai Museum added a section on Agriculture (1946) and has a few agricultural implements on display even today.

In Poona, the Lord Reay Maharashtra Industrial Museum (1988) with its first new unit completed in the mid sixties is developing as a Science Museum with collections relating to industry, technology, agriculture, forestry, engineering and handicrafts, carrying on an intensive educational programme.

Central Museum Pilamin, since sixties of the present century, has a small section on 'agriculture' in general, presenting various aspects by means of charts, models, pictures and crop samples. The first mobile exhibition on agriculture has also come into operation as a result of concerted efforts of the curators and authorities of Birla Industrial and Technological Museum, Kolkata (1980).

In 1962 the second Agricultural University on Land Grant pattern of American Universities, integrating teaching, research and extension education was established at Ludhiana (Punjab). This concept had only major difference with the existing agricultural education, prevalent in the country, that extension education was added to it with a directorate of extension education as an essential adjunct to these institutions ensuring application of the researches at a common man's level to increase production and benefit the farmers and peasants in the country.

The third campus of this University was started at Palampur, Punjab (now Himachal Predesh) to study the specialised problems of hill agriculture and allied fields (1966).

In view of the educational requirements of the basically illiterate hill peasantry, which has a predominantly agricultural economy, it was decided by the authorities to establish a museum of a agriculture at Palampur, a pioneering effort in the country, the development of which till today has already been discussed.

Apart from ICOM's patronage for this museum as a 'pilot project' interest of the visiting members of National Commission on agriculture, governing body of the Indian Council of Agricultural Research (ICAR) decided to ask all Agricultural Universities in India to start museums of agriculture (1975). Decision has also taken by the ICAR to establish a 'National Museum of Agriculture'; since then it has come to occupy a position of a movement, in which this pioneering effort at Palampur has a specific contribution.

In the conference of the Vice-Chancellors of Agricultural Universities (1977) the members showed keenness to develop museums of agriculture in these Universities. However, what is really required at this juncture is involvement of the Planning Commission on the pattern and it set up a task force (1972) for the recognition of Science and Technology Museum, which recommended a comprehensive outlay and policy decisions at the level of Central Government during the Fifth Five Year Plan. Similar recognition is required for the proper development of agricultural museums in India.

In fact agricultural Universities are the most suited institutions having adequate resources in men, material and finance in establishing central museums of agriculture taking the social and technical problems, discussed above effectively within their folds. Decision of important bodies and Vice-Chancellors of these Universities need implementation without telay. It would require more than anything else the support and interest by higher authorities. These museums, in order to play the active role they should have an independent administrative set up, which should not be made a part of the existing directorates of extension education where existing programmes of information centres are greatly confused with museum activity.

Central museums of agriculture should leave the responsibility of extension work, a part of a modern museum concept to these directorates, which have more than required infra-structure and facilities, funds, manpower, communication means within their accepted norms.

In some of the Agricultural Universities these directorates have established information centres dealing with immediate agricultural production technology. They have extended their efforts in arranging officers workshops (seminars), short term training programmes in various fields of agricultural vocations, arranging of Kisan Melas and temporary exhibitions to impart the knowhow in the area of improved agricultural productions and distributions of quality seeds and fertilisers etc. This support from ICAR, which this programme has got, has not yet assumed practical dimension, inspite of the decision, as cited above, of its governing body. Besides, agricultural Universities have no regular programme for evaluation of these extension programmes through the audience research for which no one can formulate effective programme.

Tentative Plans of the Museum

(a) I. Concept of Mother Earth in the Solar System.
    II. Life through the ages and appearance of man.
    III. Early vocations of man and agriculture through the ages, till present day (broad outline).

(b) In India –
    I. Historical back ground (early civilisation beginning from Indus Valley).
    II. Evidences of early agricultural practices from archeological evidences (Neolithic period and chalcalithic period).
    III. Antiquity of grains (cereals) – (Introduction and continuity of rice in archeological sites).
    E.G. Lothal, Rangpur, Kalibangan etc.
    IV. Reference of Rice in Ancient literature. (Starting from Rig Veda, Purans, Buddhist literatures etc.).

(B) Crop-types –
    I. Cereal crop – Rice, Wheat etc.
    II. Pulses.
    III. Fibre crops.
    IV. Oil seeds.
    V. Cotton.
    VI. Timber crops and forestry.
    VII. Fruits, vegatables, flowers and horticulture.
    VIII. Plantation crops.
    IX. Spices.
    X. Medicinal plants.

(C) Rice –
    (a) Botanical description of plant, life cycle.
    (b) Wild Rice.
    (c) Cultivated Rice.

(D) Rice cultivation

- (1) Primitive and traditional Agricultural practices.
- (2) Development of agriculture through ages (Ancient, Medieval, Recent).
- (3) Scientific and advanced agriculture and factors responsible.

(E) Factors involved in modern agricultural practices

- I. Factors responsible for rice cultivation.
- (a) Soil type.
- (b) Climate.
- (c) Temperature.
- (d) Rainfall.
- (e) Photoperiod.
- (f) Fertilizers and Manures.
- (g) Irrigation.

(F) Disease of Plant and Control
(e.g. Tungro virus, Bacterial leafbligh
Blast – Pyricularia Orygae).

(G) Insect and Pest control and Effect
(Common pests – *Tryporvga indertutas Dicladispa armigra ociv*).

- (1) Life Cycle.
- (2) Damage caused by them.
- (3) Use of pesticides.
- (4) Absorption of pesticides in biomass of field and its effect.

(H) Introduction of High yielding, disease resistant variety.
e.g. IET-355, C-R; 1-6, I-R-22, IET 723.

- (I) (a) Agricultural communities, Horticulture agriculture and allied vocation (Agriculture based industry) social lives.
  - (b) Agriculture among tribes.

(J) Traditional Implements used for agriculture, Introduction of agricultural implements, their use and their impact on agriculture and society in 20th Century.

(K) Statistical Data about production of Rice productivity.

Building Requirements

Keeping in view the scope and responsibility of a museum it is essential to provide an independent functional building at the National level with a space of 120000 square feet to begin with as it has a provision within the ICAR norms and it will be easier to get necessary funds for the purpose. Of course, planning and beginning can be made in any suitable accommodation available for the purpose with a room each for scientists, curator, exhibition technicians, artists, office store and two halls for preliminary exhibition layout requiring at least 12000 square feet are a to meet these requirements so that the difficulties faced at Palampur are not repeated anywhere.

Site for a permanent building should be a central place, which is well-connected with various channels of communication and has an easy access to the visitors.

In planning aspects of this museum building the following considerations should be the guiding factors :

(a) Total amount of working space commensurate with the scope of these museums, with a provision of 120000-150000 square feet falling within the existing ICAR norms which need to be revised to suit the requirements of a National Museum.

(b) Distribution of space for a National Museum :

(1)	for curatorial activities	15%
(2)	for administration	10%
(3)	for educational activities and public amenities	15%
(4)	for exhibitions	60% with flexibility for temporary false partitions, avoiding central pillars.

(c)(1) Control of visitor-flow and easy circulation.

(2) Secutity measures which are not as important in these museums, as in case of art and archaeological museum.

(3) Adequate ventilation for the use of natural light in combination with artificial lighting arrangement.

(4) Provision for lawns and future expansion needs of the building. Such functional building can only be designed with close co-operation of Curator/Director, Architect and the Engineers with the backing and interest of the Ministry of Agriculture. For the first time a building have been constructed at Palampur, details were worked out and ICOM's assurance in professional architectural assistance, in designing the building was a standing offer, but due to administrative difficulties this effort was frustrated. Although it was a museum of agriculture attached with the University.

Staff Requirements

In a museum volumes of information has to be condensed in an effective chronological order through the exhibition. It needs a team of various categories of personnel. First of all the museum must have a trained Museologist as its head as a Curator/Director and should have team of workers in the following categories :

(1) Curatorial

(2) Agricultural and Social Scientist

(3) Technical

(4) Administrative

With the exception of national and regional museums of agriculture, all other institutions, museums should have skeleton staff in the above mentioned categories, required for planning, administration and manitenance of these museums. However. preparation, fabrication and exhibit installation, should be executed on contract from outstanding concerns specialised in such jobs. In case of the national and regional museums there should be adequate provision for adequate staff to look after the maintenance of independent studios and workshops for designing, fabrication and installation of exhibits.

Need of scientists in socio-economic, agricultural and allied fields is a must for collection of material, processing of data and interpretation of the exhibits. They have another important field to cover, namely, to conduct surveys to find answers to the following important aspects :

(a) Composition of the visitors (audience) and their requirements in education.

(b) Composition and communication effectiveness of exhibits, formulating the educational activities of these museums.

Funds

Adequate availbility of funds to work out this new programme is foremost. Though the provision for establishment of agricultural museums did exist even at a College level within the ICAR norms, the establishment of such museums could not be taken up till the present work at Palampur, which was the first attempt in this sphere not only in India but also in the whole of Asia.

With the establishment of Himachal Pradesh Krishi Vishva Vidyalaya, Palampur (1978) the first visiting team of ICAR has allocated a sum of rupees three lacs for the Museum building. Our request for enhancing this amount and granting handsome additional grants for the purchase of three dimensional exhibits and their installation is under active consideration of the Council.

Also a sum of twelve lacs for the building and a few positions have come from the state funds during the time of agricultural complex in 1978.

With the reorganisation of existing programmes and refixed priorities of rural development, increased production and enormous programmes of mass literacy and adult education, such museums can have enough funds if support of Central and State Governments to this programme could be registered. Thus the question of finance will not stand in this way to development of a net work of agricultural museums at a National, Regional, University and Block Development levels.

Planning and Development Aspects

Agricultural museum as an educational tool in India and other developing countries is a new field, and there is practically little written work and knowledge readily available with the exception of a few papers published by the author. More so, there is not a single such institution existing in the whole region. The only efforts to create such an institution are in hand at Palampur, where the required support has not been forthcoming at a pace at which it should have been available long back. This situation has been the result of administrative difficulties being faced since the inception of this programme.

In its development aspects, first of all within the defined scope of museum, scientific and technical information has to be collected and processed for the pictorial and graphic information duly supplemented with documented material. This information should be analysed before clearance in respect of technique, system and effect to go a long way in projecting the historical aspect and focussing progressive ideas with the help of curatorial, technical and scientific personnel on the strength of the museums under the overall charge and guidance of Curator/ Director. As a next step provisional display has to be arranged and thrown open to the public at the first stage.

Then the re-examination of these exhibits, and preparation of dummy model plans have to be completed, after which final selection and preparation of the exhibits for permanent installation for years to come has to be taken up in permanent museum building designed and constructed for the purpose.

In an agricultural museum effective colour design, lighting arrangement with some working models and animated exhibit is a must to create interest in the visiting public and reassure repeated visit to leave desired educational impact which is the most important function of a museum in the present age.

Establishment of Polytechniques as Universities of Masses

Later on, when museums of agriculture are fully established and gain maturity in age, adding polytechniques (Universities of masses) providing vocational education and awarding of degrees or diplomas for illiterate people, farmers, peasants, industrial workers can be experimented. A few national and university museums can be selected to make a beginning to study the impact of the programme, on the pattern adopted in U.S.S.R., where first such university of masses in the fields of science and engineering was attached to the Polytechnical Museum (1959), and added much more projects thereafter giving very encouraging results.

Museums of Agriculture, planned, established and developed on these lines would fill the long existing gap in the effective communication effort, as enlightenment and education of the masses in the basically backward, developing and predominantly agricultural countries like India, with a national wide 70% illiteracy trying to achieve economic independence, is essential.

Of late, there has been a great emphasis on the application of science, technology and economic exploitation of natural and agricultural resources and flow of raw materials from the field to factory. This would also require radical change in the traditional uses of land for increased production to meet the population explosion at the present juncture of human history than was ever required before.

Museum on agriculture will play an important role in making the teaching-learning process, more relations with a stress on 'real objects' for students, farmers, peasants and general public including those living below the poverty line, as their visits to agricultural institutions are becoming a common feature. These museums are also bound to prove a very useful medium 'Through seeing and learning' to promote functional literacy and should form an integral part of agricultural institutions. Such a museum would cover in its scope agriculture the oldest industry in the world, depicting, crops, horticulture, forestry, animal science, rural development, cottage and allied industries and the cultural of the communities involved in this vocation. It should be comprehensive in its coverage functioning as a storehouse of knowledge on agricultural information to the people of various intellectual capacities, educational background and age groups, the task which no other single institution can cover. Such museum would also serve as an useful aid in teaching and research through their documented reference collections.

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The following information is considered as source material and may be disseminated in the proposed museum.

Rice – Origin and Cultivation

The genus oryza, to which rice belongs, has 28 species and sub-species, of which 26 are wild and two, *O sativa* and *O glabertima*, are cultivated. All the rice varities of Asia, Europe and America belong to *O sativa* and of West Africa to *O glaberrima.* India has five wild species of which *O sativa* var. *fatua* is a common seed in many states. *O perennis*, found wild in Orissa, has a short rhizome, a branched floating stem and perennial habit. In wild rices, grains shatter easily and are difficult to harvest.

Among the wild species, there has been a regular trend of evolution from perennial to annual habit from cross-pollination to self-pollination and from lesser to greater fecundity.

Looking back in history and considering the evolution of cultivated rices it may be said that man took annual wild types of nivara, breviligulata, subjected them to the selection pressure of cultivation, harvesting and sowing and thereby give rise to the sativa cultivators in Asia. The West Africa rice, *O glaberrima*, represents the cultivated member of a series parallel to that occuring in Asia. There is no evidence of exchange between Asia and West Africa in prehistoric times to account for the existence of *D glaberrima* and it must be accepted as a separate domestication.

It is considered that *O. sativa* evolved from the wild rice by mutation and selection. It is thought that rice cultivation originated in India, Burma or Indo-China. India has more than 4000 varieties of rice.

Malayan migrants introduced rice cultivation in Indo-China in protohistoric times. Rice was introduced in the Philippines, by immigrants from South China in the first millennium B.C. They developed the vast terrace system in the mountains of the Phillippines. On account of it heavy yields rice could support a far denser population than that of any other cereal and consequently population in rice lands increased at an explosive rate.

According to Shastry and Sharma, the genus *oryza* started initially as a small plant growing in well drained soils in the humid atmosphere of forests. The hydrophytic habit with preference for open sunshine and a larger size of plant (e.g. *O officenalis*) were later phylogenetic developments. The tuberculations on the surface of the fertile lemma and palea and the development of awns are also advanced characters in *oryza,* though in the most advanced, cultivated species *O sativa* and *O glabertima*, the awns are often suppressed. Lastly, it follows that South-East Asia is the probable centre of origin of the genus and its spread to the African and American continents was a later development.

Most species of *oryza* are deployed with 2n = 24 chromosomes. The deploids are distributed in the tropics of Asia and Africa, whereas the tetraploids are distributed in the tropics of Asia and Africa, although the tetraploids are found in the tropics of America as well as of the old world.

The basic topic is a wild perennial grassy species which grows in ponds, ditches and canals and which sometimes occurs as a weed in rice cultivations. It has panicles which shatter on ripening and seeds with hard seed-coat and considerable dormancy. It is found throughout the old world tropics from South China and the Phillippines to West-Africa and it has been recorded from South America.

Numerous specific names have been given to the forms of this wild perennial collected from different geographical areas. In Asia, the names *O perinnis*, *O balunga* and *O rufipogan* have been used and is usually described as *O cubensis.*

The cultivated rices fall into two species – namely *O sativa* in Asia and *O glaberrima* in West Africa. The Asian species falls into two genetically and geographically distinct races, the indica, race of India sub-continent and the japonica race of Japan and North China.

Archaeobotanical Record of Rice

The earliest archaeobotanical record of rice in India from Lothal (2300 B.C.) and Rangpur (2000 to 1800 B.C.) in Gujarat. This is in the form of impressions of spikelets on pot-sherds. Gujarat which is largely dry area is hardly the habitat for rice. It is what is known as an accident of archaeology and attempt should not be made to read too much in it. In due course, older sites may be discovered in eastern India, which is the true home of rice. It is the find of *oryza sativa* from Neolithic *Chirand* in Bihar (2000 to 1500 B.C.) which is much more significant. *Oryza* sativa was also found from *Pandu Rajar* Dhibi (second millennium B.C.) from West Bengal. It is also recorded from *Navdatoli* (1550-1400 B.C.), Histinapur (1100-800 B.C.) and Atranjikhera (1200-600 B.C.) in Uttar Pradesh.

Spikelets, husks and grains of rice found in an excavation at Hastinapur, fig. 1(a).

The earliest record of rice in the world, however, comes from Non Nok Tha in Thailand, where it dates to 3500 B.C. Here impressions of rice grains have been found on potsherds. It was also found in late Neolithic of China which dates to 1650 B.C.

Diffuse Origin of Rice

Rice has had a diffuse origin (cf. Harlan, 1965) of both space and time. Several centres of origin have been proposed for Asian rice. Southern India (Walt 1882; Ramiah and Ghosh, 1951) (Nair et al 1964), Jaypore tract in Orissa in South Eastern India (a secondary centre Ramiah and Ghosh 1951), the Phillippines (Ramiah and Ghosh, 1951), China (de candolle, 1886, Rosehevicz, 1931; Ting, 1949), Indo-China (Hamada 1949) and the Western Indo Pacific area (Barran, 1969). All these areas show today considerable varietal diversity. In addition, the North-Western and north-eastern foothills of Himalayas (Ramiah and Ghosh, 1951) and the Guyanas (Porteres, 1949) are known to show much variation. The difficulties resulting from considering the centres of diversity as centres of origin are well known by now (cf Zohery, 1970) with the ancestral species present in this original habitat in all these regions of variability and with the knowledge that this species is found good enough even today for harvesting, the change over from rice gathering to rice culture could have been attempted in each of these regions and at various times. This can be witnessed even today in some areas such as the Jaypore tract in Orissa in eastern India Further the transition from the wild to the cultivated form in rice is of a much lower magnitude than that involved in least the principle cereals. And the ennoblement could have been effected by the people in habitating these regions.

Nayer seems to be correct when he says that rice had a diffuse origin both in space and time. Among centres of origin proposed in India are the Malabar Coast in Kerala, the Jaypore tract in Orissa and the North-Eastern foothills of Himalayas. In these areas there are several wild taxa, including both annual and perennial *rufipagon* and high varietal diversity.

When one examines rice cultivation in India at present, finds that its largest concentration is in eastern India, viz. West Bengal, northern Bihar and Orissa. This fact also lends support to the theory that this area is the main centre of the origin of rice in India.

Reference of Rice in Sanskrit Literature

I. Literature

The *Rigveda* (Griffith, 1963; *Vishvabandhu,* 1964-65); The key words are *yava* translated as either and grain yielding flour or meal (Monier-Williams, 1899; Macdonell and Keith, 1958) or barley (Benfey, 1866; Apte, 1959) **dhana** taken to denote rice (Monier-Williams, 1899); this is disputed by Macdonell and Keith, 1958), and *anna* the precise meaning of which may not extend beyond a generic name of staple cereals. The contexts of these words do not permit a precise identification.

The *Taittiriya Samhita* of the Black *Yajurveda* (Aeith, 1967; *Vedic Sansodhan Mandala,* 1972; the key words are *vrihi* translated as rice and *nivare* translated as wild rice. The varieties of rice mentioned are black rice, swift growing rice, large rice and white rice, Vrihi and nivara were offered to deities. The rice crop was harvested in autumn.

The *Vajasanevi Samhita* of the *White Yajurveda* (Griffith, 1957); The preparation of rice cakes in rituals in described at length, from taking the rice grain from the caret, winnowing and pounding it and cooking an offering.

The *Samaveda* (Griffith, 1963); There is no specific mention of rice.

The *Atharvaveda* (Griffith, 1916-17); Vishvabandhu, (1960-62); the terms are vrihi and dhanyam, Rice (alongwith barley) was supposed to have possessed medicinal and recuperative power and was closely identified with *Drana* or breath and prosperity. Rice was offered to deities in the form of *odana, charu, purodasa* and *tandula* and obtained after threshing and winnowing-of (Monier-Williams, 1899).

The *Aitareya Brahmana* (Haug, 1977); Rice was offered in rituals in the form of charu, purodasa and payasa. Small-grained rice and large-grained rice are mentioned among the ritual items of a coronation ceremony.

The *Satapatha Brahmana* (Eggeling, 1966; Chowkhamba Sanskrit Series, 1964); Two preparations of rice-rice cake, the preparation of which has been elaborately described and what has been called *anvaharya* mess-were offered in rituals. Different varieties of rice were offered to different deities; fast grown rice (Plasuka) to Savitri Satyaprasava, quick grown rice (asu) to Agni Grihapati, wild rice (*nivara*) to Brihaspati Vak, red rice grains (hayana) to Indra and black rice grains to Nirriti, malted rice also appears as part of the offerings in certain rituals.

Other *Brahmanas* (Caland, 1931; Bodewitz, 1973; Mitra, 1972); The *Panchavimsa, Taminiya* and *Gopatha Brahmanas* mention rice in the context of rituals.

The *Upanisads* (Max Muller, 1965; Swahananda, 1956; Vidyarnva, 1933); Rice (vrihi) occurs in philosophical analogies such as the Brihadaranyaka Upanisad.

The *Srauta Sutras* (Dandekar, 1962, 1973) : There are many references to the use of rice in many varieties of rituals. Black and white paddy are mentioned often. Other types of rice

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Ref. : A History of Agriculture in India Vol. I Randhuya, M.S. 1980.

are *nivara* (Manu 5.01.10 1-3), hayana (red rice) and *apatanta* rice. Mention has also been made of different sizes of rice grains and of the following preparations of rice : rice flour, rice dough. *Surasoma*, pop corn, *tari* and *masara* (Dandekar, 1962, vol. 1:903). The last two items were possibly used for preparing wine.

The *Grhya Sutras* (Oldenberg, 1964) : Rice is associated with rituals in virtually all stages of human life. It was considered meritorious to distribute rice after certain ceremonies to the Brahmins.

The *Dharma Sutras* (Bunler, 1965) : Rice figures in rituals similar to those mentioned in the Srauta and *Grhya Sutra* texts. It also figures in various penances enjoined on these who transgressed the sacred law. There are restrictions on brahmins regarding trade in rice. Liquor obtained from rice is mentioned.

The *Vinaya Pitaka* (Horner, 1949-52) : Two varieties of rice are mentioned; *vihi* and *sali*. *Sali* is supposed to be a later word for rice (Macdonell and Keih, 1958). This is also supposed to be a rice which is sown in rainy season and harvested in winter (Suryakanta, 1975). The terms like *odana, bhatta* and *sukkhakura* denote different rice preparations. The size of the monk's bowl was measured by the amount of rice it could hold. There are references to some rice growing areas : Champa (II), Sravasti (II), Rajagriha (VII) and Magadha in general. The following is obviously a charming reference to the extensive, terraced rice-fields of *Magadha*:

There is also a mention of liquor obtained from cooked rice. Rice was not considered suitable diet in certain ailments.

The *Majjhima Nikaya* (Horner, 1954-59) : The varieties mentioned are : hill paddy, wild rice, rice from which the black grains have been removed, and an apparently mythical, large-grained rice. Preparations of rice mentioned are; boiled rice, rice cooked in milk, and gruel and powder of rice husks.

The *Samyutta Nikaya* (Davids, 1950-56); Only choicest rice, is mentioned in the context of sravasti. There is a reference to a brahmin offering a preparation of rice with ghee in a religious ceremony.

The *Jatakas* (Cowell, 1957; Fausboll, 1977-99) : The varieties mentioned are : hill paddy, wild rice (*nivara* and *sayamjatasali*), red paddy (*rattasali*), *vini*. There is also reference to rice of superior quality. Rice grains were called *tandula* and preparations of rice *bhattam* and *payasa*. Some rice-growing areas are : Gandhara, Benaras, Sravasti and Magadha. There is mention of huge estates of rice : "he held an estate of one thousand acres, where he grew rice. Preparation of the field is described at length in the Kama Tataka where there is a reference to the preparation of little embanked squares for water. The lack of water brought a drop in yields :

"....... But there was not much rice in it, and the Great Being said, "why, Madam, there is very little rice here." "We got no gater". "You mean when your field was in growth you got no water upon it". "Even so, master."

There is reference to both excess rain damaging the rice crop and drought when no rice was available. There is also mention of the storage of rice in overflowing granaries and wagon loads of rice crossing highways fresh, matured and scented rice were in common use. Rice given as alms finds plentiful mention and is landed. Rice seems to have been a form of remuneration for both domestic and agricultural workers. The king probably received some tax in kinds specifically, rice. Other uses of rice were as an ingredient of liquor and in religious offerings by the brahmins. The medicinal use of rice is also focussed. A unique use of rice is that in praparing arrows : ''....... The arrowmaker had heated an arrow in a pan of coals and had wetted it with sour rice gruel, and, on closing one eye, was looking with the other while he made the arrow straight..........''.

The *Sutta Nipata* (Chalmers, 1932) : There is not much information except the giving of rice as alms.

The *Thera Gatha* and the *Theri Gatha* (Davids, 1964) : There is mention of threshing, pounding and boiling of rice. Rice was offered to the Buddha and his followers. Wild rice appears to have been available in a forest glade, three leagues from Rajagriha. The term *Kura* denoted perhaps a type of wild rice and was found at Sravasti.

The Dhammapada (Burlingame, 1969) : The varieties mentioned are : red rice, hill paddy and wild rice. Purest rice is also spoken of. There is a detailed description of rice field. Women appear to have been employed as keepers of rice fields. Storage of rice under famine conditions was possible for the better-off sections of the society. The regions associated with rice are Uttarakuru, Benaras, Sravasti, the territories of the Sakiyas and Koliyas and Kosala rice was donated to the Buddhist congregation by all sections of the society. There is a reference to the fact that five hundred cart loads of rice, alongwith agricultural implements, were a part of a treussean. Remuneration by way of rice is mentioned.

The *Astadhyayi* (Vasu, 1962) : The varieties mentioned are : *vrihi, sali, lohita sali, hayana, mahavrihi* and *nivara.* Rice was sown in summer and ripened in autumn. A great number of references peak of rice as a cereal, *odana.* Flattened rice is called *Prthuka. Purodasa* and charu of rice were given in religious offerings. *Tandula* on rice grain was used in religious ceremonies.

The *Arthasastra* (Kangle, 1963-66) : The treatment of individual crops is not as exhaustive as that of the general agricutural background and the role of the state in that sphere. However, *sali* and *vrthi* are mentioned, alongwith *udaraka* and *varaka* which have been tentatively interpreted by Om Prakash (1961) as two varieties of rice introduced in that period. Rice was used in rituals.

The *Mahabhasya* : There are references to *vrihi* and *sali.* Magadha is said to be famous for sali in this period.

The *Milinda Panha* (Horner, 1963-64) : Rice is mentioned as an important crop. Of the two types of red rice mentioned one, *parumbhaka,* is supposed to be unhealthy.

Susruta Semhita (Bhishagratna, 1963) : The following main varieties are mentioned alongwith their sub-varieties which are considerable in number : *Sali, sastika, vrihi* and *kudhanya.* Their medicinal properties are described in detail.

The *Charaka Samhita* (Ray and Gupta, 1965) : Different varieties of rice are mentioned some of which are common to the varieties mentioned in the susruta samhita. The medicinal properties are described. For instance, tandula was generally used as a vitaliser.

The *Mahabharata* (Roy, 1955-56 : De, 1936, 1940, 1958) : There are references to *sali* (Santi, Parva), *nivara* (Udyoga Parva, use of rice in rituals) (Sabha Parva, the auspicious character of sundried rice) (Drona Parva, and fried paddy) (Drona Parva etc.).

Ref. : Preliminary noted on the Early History of Rice in India – Ghosh T.T. and Chakrabarti C.D. Nanand Environment 1980.

The *Ramayana* (H.P. Sastri, 1952-59; Bhat, 1960; Vaidya, 1960) : There are references to rice in different ceremonies : marriage (Bala Kanda, daily oblations) (Ayodhya Kanda, funeral ceremonies) (Ayodhya Kanda). Rice was considered auspicious (Ayodhya Kanda), in Aranya Kanda, there is an evocative description of a rice field :

"....... fields of rice with ears resembling Khajura flowers bend gracefully under the weight of the grain".

The *Smrtis* (Jolly, 1965; Buhler, 1964) : Of the varieties, *vrihi, sali* (Manu.) and wild rice are mentioned. The most significant references relate to the use of rice in judicial proceedings, rituals and penances. An interesting reference speaks of the assignment of a measure of rice by a king to the widow of one whose property had lapsed in escheat.

Amarakosa (Sardesai and padhye, 1969; Sardesai and Sharma, 1941) : *Vrihi, sali, nivara, kalama* and sastika are mentioned. Rice cultivation depended on rain or river water. The different rice preparations mentioned are flattened rice (prthuka), boiled rice (bhisma) and rice gruel (odana).

Hiuen Tsang (Beal, 1885) : In Huen Tsang, rice figures had shown as an important Indian crop. One may mention a type of rice, supposedly ripening in sixty days growing in the kingdom of Po-li-ye-to-lo, probably to the West of Mathura.

The Puranas : M.N.D. Shastri, 1967; Wilson, 1972; Pargiter, 1904; Akhtar, 1972; M.N.D. Shastri, 1968; Tagore, 1976-78; J.L. Shastri, 1969-70; J.L. Shastri 1973) : The references to rice in rituals are virtually overwhelming.

The following varieties are mentioned : red rice, sali, vrihi, (Matsya), aman rice (Markandeya Pur), white rice (Matsya Pur.) black rice (Agni Pur.) nivara (Vishu Pur.) samthi rice (Matsya Pur.), plain rice (Matsya), small grained rice (Markandeya Pur.)? Syamaka rice (Lingapur), and sastika rice (Siva Pur.). The different parts of a rice plant are explicity described in the course of a philosophical discourse (Visnu Pur.). The medicinal properties of some varieties are listed A unique use of rice is mentioned in the following passage (Caruda Pur.).

".... the process of cleansing and perforating the pearl seeds is as follows : first, all the pearls should be collected and kept in a bowl of boiled rice, previously saturated with the expressed juice of the jambhera fruits (lime). Then the whole contents of the bowl should be kept simmering for a while after which the pearls should be taken out and rubbed with the liquid extract of boiled rice. Thus softened, they should be pierced through as desired."

Liquor distilled from wild rice is mentioned. There is also a reference to the hypothecation of paddy and the rules pertaining to it (Agni Pur). There is hardly any better indication of the importance of rice in the Indian literary corpus than the following passage in the Linga Purana

".....everything is founded on cooked rice ..... the vital breaths are established in cooked rice.........".

II. Archaeology

Koldihawa (Misra, 1977 : 107-119) : Rice, both wild and domesticated, is reported from the neolithic level of this site in the Belan valley, U.P. (Vishnu-Mittre, 1976). There are two early C-14 dates from this site : 4530-185 B.C. (PRL-101) and 5440-240 B.C. (PRL-100). Another sample from the same level (PRL-223) gives a date of 1440-120 B.C. Besides, the radiocarbon dates from the neolithic level at another site, Mahagara, in the same area are : 1440-120 B.C. (PRL-407), 1380-120 B.C. (PRL-408) and 1400-150 B.C. (PRL-409). It may be noted that straw and rice husk were used as "degraissant" in the handmade Koldihawa neolithic pottery.

Chirand (Narain, 1970) : The record of rice is in the form of husk-impressions on pieces of clay and some charred grains. Primarily on the basis of a study of dimensions Vishnu-Mittre (1972) classifies the find into two groups : the cultivated *Oryza sativa* and the wild *Oryza rufipogon*. The radiocarbon dates from Chirand are not particularly consistent (Shaffer and Chakrabarti, 1977 : 392) but Narain (1979) suggests that the dates are not from the lower levels of the 2m.... thick neolithic deposit. The beginning of the neolithic phase at Chirand may be tentatively put around 2000 B.C.

Baidipur (Vishnu-Mittre, 1974) : This site in the Mayurbhanj district, Orissa, has been called by Vishnu-Mittre (1974) "late neolithic" and the rice from this level has been classified by him as the wild *Oryza perennis* on the basis of dimensional measurements. Vishnu-Mittre's dating of this site is subjective because nothing is known of the absolute date of this site.

Oriup (Vishnu-Mittre 1974) : the details of rice at this chalcolithic site in the Bhagalpur district, Bihar, are not known. Vishnu-Mittre (1974) mistakenly calls this site neolithic.

Barudih (Singhbhum district, Bihar) : Rice occurs in a context around 1000 B.C. There is a profusion of neolithic celts and handmade pottery but there is an iron sickle as well.

Rangpur (Ghosh and Lal, 1962-63) : Rice has been identified in the Harappan level. The record is in the form of husk embedded in mud plaster. The identification was done on the basis of a characteristic pattern on the surface (chess-board pattern).

Lothal : Impressions of rice spikelets (only 3? Vishnu-Mittre, 1974) are found in the Harappan context.

Ahar : A large number of chalcolithic sherds (going back to c.2000 B.C.) bear impressions of rice husk and spikelets identified by Vishnu-Mittre (1969) as the long-seeded strain of *Oryza sativa Lin. Var. Sativa Bar.*

Kalibangan : The report of rice in the Harappan context has been disputed by Vishnu-Mittre and Savitri (1973).

Navdatoli : Charred rice grains occur in Phases 2-4 of the chalcolithic level, possibly around the middle of the second millennium B.C. Vishnu-Mittre (1961) puts them as a hybrid between the Indica and Japanica varieties.

Inamgaon : The Jorwe culture in namgaon (c. 1400-700 B.C.?) has rice grains but in a very limited quantity (Kajale, 1977).

Mahisdal : Charred rice grains and impressions occur in both chalcolithic and Iron Age levels of the site, beginning around 1400 B.C. (Vishnu-Mittre, 1974).

Pandu Rajar Dhibi : Rice husk impressions occur in the pre-chalcolithic level of this site in the Burdwan district, West Bengal (Ghosh and Chakrabarti, 1968).

Sonpur : Husk impressions and charred rice grains occur in the chalcolithic and the subsequent levels of the site (Gaya district, Bihar) and have been identified by Vishnu-Mittre (1974).

Ref. Preliminary Notes on the Barley History of Rice in India. Chakraborty, Dilip Kr. and Ghosh T.T. Man and Environment.

Atranjikhera (Chowdhury, Saraswat and Buth, 1977) : (1) The O.C.P. level : the remains recovered from the mud clods and wall plaster, were identified as the cultivated *Oryza sativa* but could not be assigned to any specific variety or varieties. (2) the black-and Red ware level; Oryza sativa in the form of impressions on potsherds and mudplaster. (3) the painted Grey were level; there is a plentiful occurrence of rice but the sub-variety could not be determined even here. (4) the N.B.P. level; although there were hundreds of undamaged, husked grains they could not be assigned to any sub-species. The general impression of Chowdhury, Saraswat and Buth (1977) is that between 2000 and 50 B.C. (the O.C.P. –N.B.P.) rice at Atranjkhera was going through different stages of evolution and it is not advisable to pin-point the sub-species. The date of the O.C.P. level at Atranjikhera is somewhat uncertain, the thermo-luniniscent dates notwithstanding. However, one may not be wrong to put its beginning at this site around 2000 B.C.

Hastinapur (Chowdhury and Ghosh, 1955) : Husks of cultivated rice have been identified in the Painted Grey ware level (c. 800 B.C.?).

Non (Vishnu-Mittre and savithri, 1974) : Rice occurs in all the three main levels – the Black-and-Red ware, the Painted Grey ware and early historical levels. Rice from the early historical level has been found belonging to the long-grained variety of sub-species Indica of *Oryza sativa.*

Gandhara Grave Culture (Constantini, 1971) : *Oryza sativa* has been reported from the Gandhara but the exact context in the wide time-range of c. 2000-400 B.C. is not clear in the published report.

Hallur (Vishnu-Mittre, 1971) : context; Iron Age, around 1000 B.C. The record of rice is in the form of incrustations on arrowheads. The sub-species has not been determined.

Early historical sites : Vishnu-Mittre (1974) refers to sites like pataliputra (charred spikelets and grains), Rajghat, Rajgir, Ujjain, (charred spikelets and grains) Nagda (charred spikelets and grains, Ter (charred grains and spikelets), Pauni (rice impressions), Rupar (charred grains), Kolhapur (charred grains), Khokrakot (rice impressions), Rangmahal (husks), and Nevasa (charred grains). Kajale 1974 (a) mentions Tripuri and Nagara. At Bhokardan (Kajale, 1974). b) and Paunar (Vishnu-Mittre and Gupta, 1968) the rice records which are in the form of charred grains and impressions respectively have been identified as the sub-species, *Oryza sativa* Var. *Linn. Sativa Bor.* The sub-species could not be satisfactorily determined at Kaundinyapur (Charred grains; Vishnu-Mittre, 1966). Fig. 1(a).

Rice of any time and place belongs to the genus Oryza. The present form of domesticated rice is termed as *Oryza sativa* L. There are a number of varieties of rice, and they may be classified into two groups viz., domesticated and wild. The differences between these two major groups may only be understood if a close look is given on the total plant. Variations are observed with regard to root, stem, lamina, etc. though all these differences do not always help to identify as cultivated of wild (Fig. 1a).

For the purpose of understanding rice, specially the plan area it is better to start with the modern cultivated variety *O. sativa L.* Generally it is self-pollinated, although cross pollination is not completely absent. The lemma and palea opened from tip downwards, Grist (1965) and dealt with the morphology and the nature of grain in detailed form. A brief account of the same, of course, relevant for the present purpose, may be useful. The grain consists of a pericarp which is formed of ovary wall integumenta and nucellous. The outer wall of endosperm is composed

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of a single layer of cells. The colour of pericarp varies from dull white to reddish hue. The endosperm contains the starch cell with possession of protein cells placed laterally. During ripening the embryo is fully developed and the spikelet becomes short and swollen. Finally, the endosperm cells, become hard when palea and leamma contact each other covering tightly the hard grains. In case of cultivated rice that grain is fixed with the main axis of the spikelet through peduncle. The grains are shattered on the eve of maturity in case of wild type.

The tribe Oryzea belong to the family Graminesa which is now termed as poaceae. The sub-tribe is Oryzene with genus being Oryza. About the species within this genus there are some amount of controversies with regard to species variation. But on the whole the acceptable ones are :

Oryza sativa L.
O. Glaberrima steud.
O. Breviligulata A. Chevalier et Rochr.
O. austradiensis Domin.
O. schelechteri Pilger.
O. coarctata Roxb.
O. officinalis Wall. et Watt.
O. minuta J.S. Presal. et C.B. Presl.
O. eichingeri A. Peter.
O. punctata Kotschy et Steud.
O. Latifolia Desv.
O. ridley Hook. f.
O. alta Swallen.
O. brachyantha A. Chev. et Rochr.
O. angustifolia C.E. Hubb.
O. perrieri A. Camus.
O. tisseranti A. Chey.
O. Meyeriana (Zoll. et Mor. ex Steud) Baill.

Out of these forementioned species, only two are cultivated; they are *O. sativa L.* and *O. glaberrima Steud.* Although the latter is very much restricted to western Africa. The former species is found almost in all parts of tropical and sub-tropical areas. The genus Oryza has both annual and perennial forms of which the cultivated varieties are annual.

In case of India the cultivated variety is of course present while the wild varieties which are found to occur include *O. coarctata Roxb.* in western and eastern coastal areas. The other coastal form is *O. perennis* A. Camus, as found in coastal Orissa region. A. Granulata Ness et. Arn. ex. Hook. f. is found both in the tip of penninsular India and southern Assam region. The inland varieties consists of *O. sativa* Lin. var fatua Prain is found in central India and Uttar Pradesh and so also in central Assam. The other inland variety comprises O. Officinalis Wall. et. Watt.

The distribution of wild rice of this kind in India clearly indicates that the eastern half has got all the wild varieties. It is further assumed the varietal occurrence is perhaps related to the eco-system of the region concerned, as comparatively dry or semi-aquatic of the interphase environmental conditions (Fig. 2).

About the presence of wild varieties of rice reports were made by Chatterjee (1947), Ramiah and Ghosh (1951). At this juncture it is necessary to mention that *O. Sativa* var fatua and O. perennis were excluded from the classificatory scheme of rice. In 1963 as per recommendation of the Symposium on Rice Genetics and Cytogenetics, the former species was classified as a distinct one while later it has been found that the same is a hybrid of O. sativa L. and O. perennis (Sampath and Rao, 1951). Again, the annual variety O. sativa var fatus has also been classified as O. rufipogon Griff (Bor, 1960).

Rice types and environmental conditions :

Rice is practically grown in almost all parts of India except some places like Rajasthan, western parts of Maharastra, south western parts of Punjab, etc. At the same time, there are some areas where the production of rice is over 80%. Such areas include the whole of north-eastern India comprising Assam, Meghalaya, Manipur, Arunachal Pradesh, the state of West Bengal and Orissa, parts of eastern and southern Bihar. In addition to the same, ther are pockets both in eastern and western coastal parts.

From the distribution of rice, it shows that the extension of distribution of rice covers between 45^0 NL. and 40^0 SL. In this coverage the region is sub-tropical with heavy rainfall, high temperature and long hours of sunshine. In the low-lying regions, the concentration of rice is most. As a matter of fact, rice growing area is situated between equator and 40^0 NL and from 70^0 to 140^0 EL. This is also confirmed by others like Ghosh, Ghatge and Subrahmaniyam (1960), Grist (1965) etc.

It has further been estimated whereby the compressed area is placed from 10^0 to 30^0 NL and from 75^0 to 95^0 EL. It is suggested that the most favourable area for rice cultivation is between 20^0 and 28^0 NL and from 84^0 to 95^0 EL (Fig. 3). Of course, this limiting factors through latitudes and longitudes, the practical base are other factors such as altitude, temperature, duration of sunlight, rainfall, soil conditions etc.

Rice is found on high altitude as in Kashmir, and even in lower altitude like southern West Bangal. However, the high altitude area contains the mutant forms of rice. In reality, places like plains, low-lying areas, and delta are more favourable for rice cultivation than the rest regions.

Temperature cannot be ignored with regard to rice growing areas. The average required temperature for rice cultivation ranges between 20^0C (68^0F) and 37^0C (100^0F). For such condition the Brahmaputra valley, Bihar, Orissa, West Bengal and northern part of Andhra Pradesh appear to be congenial.

Duration of sunlight is essential both for the purpose of living as well as for photosynthesis. So far the core data in this regard are not available.

About rainfall it appears that the annual average between 250 and 500 cm is the favoured situation. Time converage or the span of rainfall is also an important criterion.

There is a popular term, known as paddy soil. It is still necessary to identify the real paddy soil, whether there is the existence of the same. It is true that rice is grown (Pondelton, 1943; Dulal, 1958) on alluvial soil, specially on "creamy and devoid of crumbs" (Grist, 1965:17). Such factor tallies with the area where rice is grown plenty.

Process of transformation from wild to domesticated rice type

Archaeological materials have already proved that from the very emergence of man there was non-production base of economic persuits. Much later probably during 6000 years B.P., a new wave of culture came into existence. This culture is characterised by food production economy, mainly in the form of domestication of cereals. The type of cereals depend on the region, as wheat in western Asia, maize in America and rice in south and south-east Asia.

It was a popular belief that man was solely responsible for the production of cultivated varieties of rice from wild type. This is never possible in any way. Morphology, character, behaviour and physiology of living organism depend on the genome complex. Without any alteration of genic make-up the characteres can hardly be changed. The genetic composition of wild and cultivated types of rice is different from each other. Even such changes are met with in the species level. Quite a good deal of work has been carried out on rice genetics (Sampath and Rao, 1951); Krishnaswami and Chandrasekharan 1957; Gobindaswami and Krishnamurthy, 1953). A compilation has been made by Chandraratna (1964) on the works of genetics and breeding of rice.

One specific example may be given in this context for the purpose of clarity. Wild variety of rice is detached by shattering in nature with which the grains fall off when they are green and not matured. Cultivated varieties of rice are always non-shattering type. This character is practically an expression of genic manifestation. Naturally, the differences between the two major groups are due to the difference of genome complex. There is no clear cut indication about the process of transformation from wild to cultivated varieties of rice. It may be assumed that shattering to non-shattering variety is a product of natural selection. If it be so, during the initial stage the selected types were few in number.

Simulaneously, as a consequence of population explosion man was in need of finding out a new resourecs of food. His attention was drawn by the selected variety. A combination of two selective pressure, the natural and human, practically ushered the beginning of food production economy. The second selection is more a nurture that pure bio-selection.

With respect of the number of chromosomes the difference is minimum. In most of the wild types and in O. sativa L. the chromosome number is 24. Although there are a few wild species in which number is 48 (Kuwada, 1910; Parthasarathy 1938).

About the transformation a suggestion is put forward here. At least 4 species viz, O.coarctata, O. granulata, O. minuta and O. officinalis are pure wild form while O. perennis is provided with slight deviation from true wild types. Again O. rufipogon may be placed on the verge of domestication, and the type O. sativa L. is purely domesticated. It is suggested that O. perennis received impacts through ecological forces and thereby some amount of transformation of characters came into being, and the result is the emergence of O. rufipogon.

Human forces also played a vital role and in such process further transformation of characters took place. Due to human selection O. perennis gave rise to either O. rufipogon or O. sativa. The other suggestion is the transformation of O. rufipogon which finally gave rise to O. sativa (Fig.4).

The above model of transformation is of course a hypothetical one, although it contains the factors and resultant of both ecological and human forces. It requires to be noted that detail investigation along this line, especially from the point of view of cytogenetics, is indeed essential.

The natural selection which initiated the transformation from wild to domesticated types of rice also helped the other selection that is the survival of man at least since 6000 years B.C.

White rice, in different species, is still found in India. In many areas the wild rice is still being exploited by the local communities. It is perhaps necessary to note here that in cases alongwith O. sativa, the domesticated type, other shattering varieties are found to occur, although in very scarce number. It is not due to less stabilisation of genetic make-up of cultivated form, as reversal mechanism does not occur in evolution. It may be explained that in O. sativa population, mixed population of wild forms is present in least proportion.

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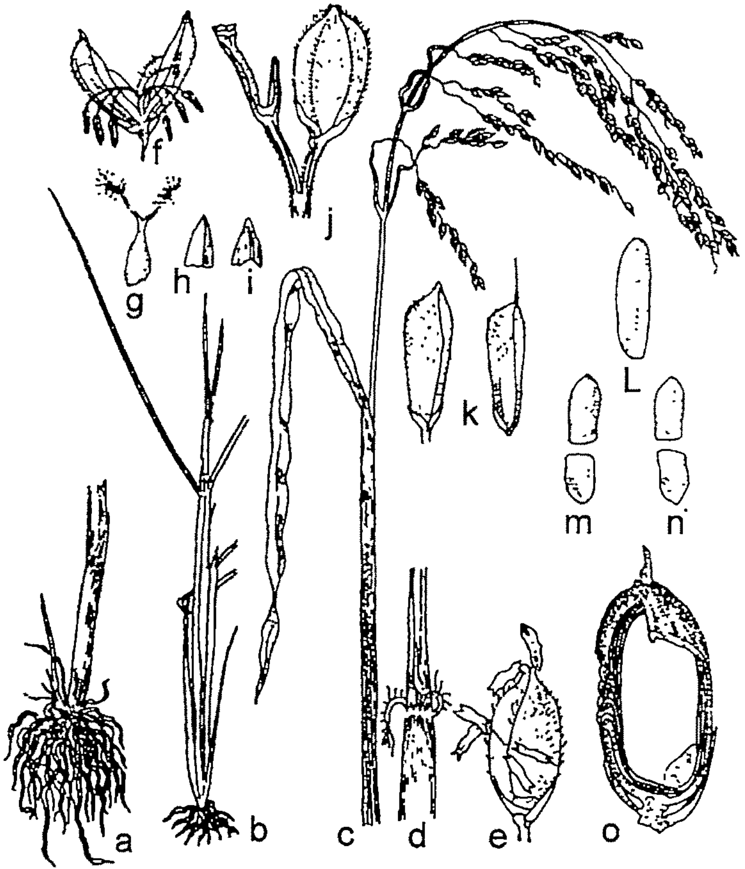


Figure 1

Different parts of the plant *Oryza sativa* L.

a—base of the plant and roots; b—part of the stem with leaf; c—panicle; d—ligule and auricules; e—spikelet; f—flower of rice showing reproductive organs; g—ovary; h—lemma empty lower; i—lemma empty upper; j—partial raceme with one mature spikelet; k—rice grain without (left) and with (right) awn; l, m and n—varieties of kernel; o—rice grain showing the detail structure.

DISTRIBUTION OF
DIFFERENT VARIETIES OF ORYZA

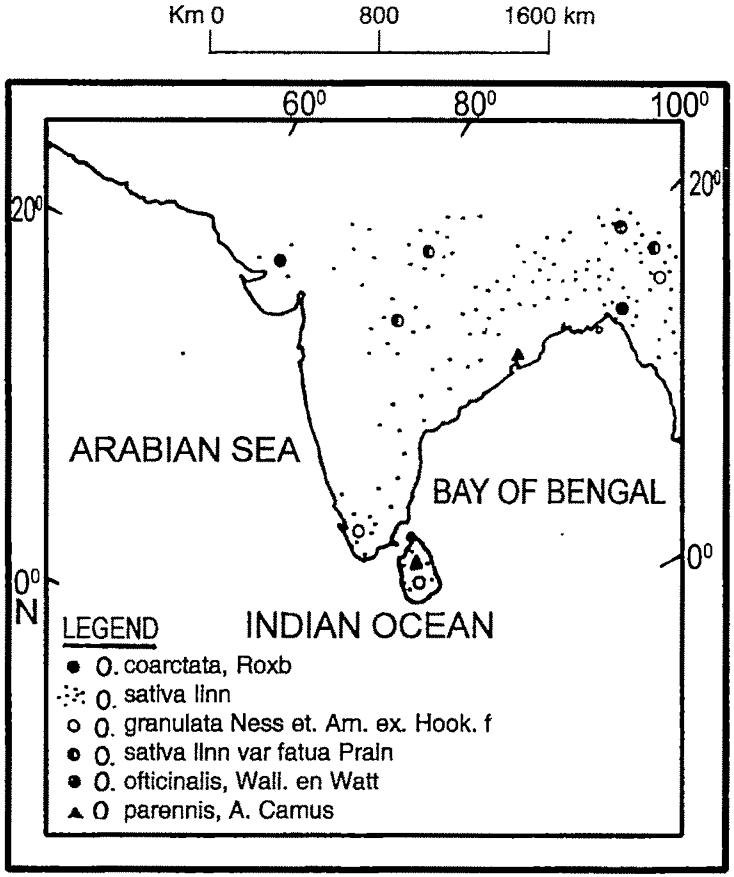


Figure - 2

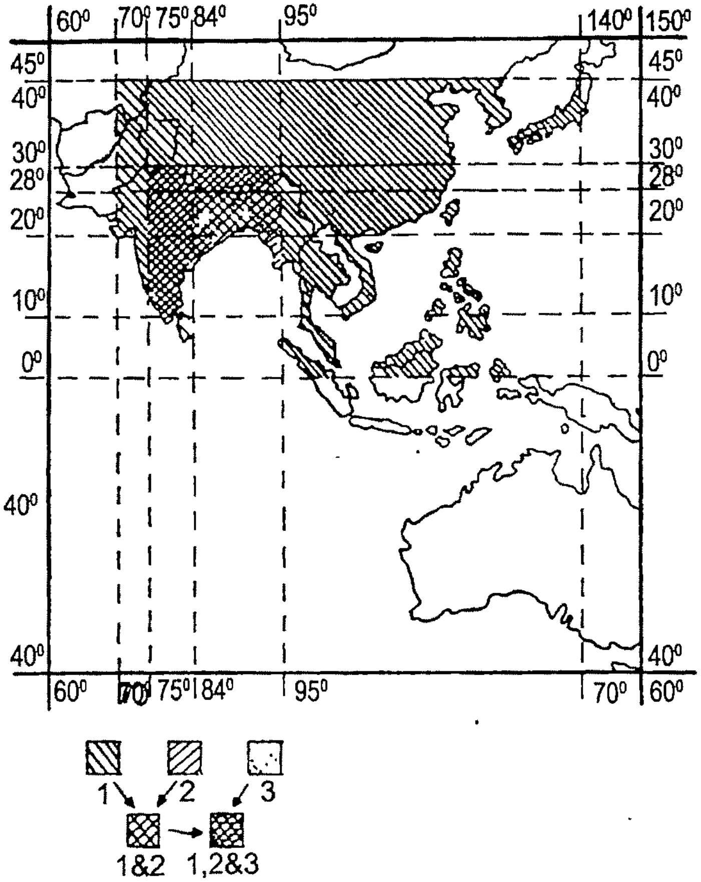


Figure - 3

1—rice growing area; 2—favourable area for rice cultivation; 3—most favourable area for rice cultivation. The area of coincidence of 1, 2 & 3 have also been shown.

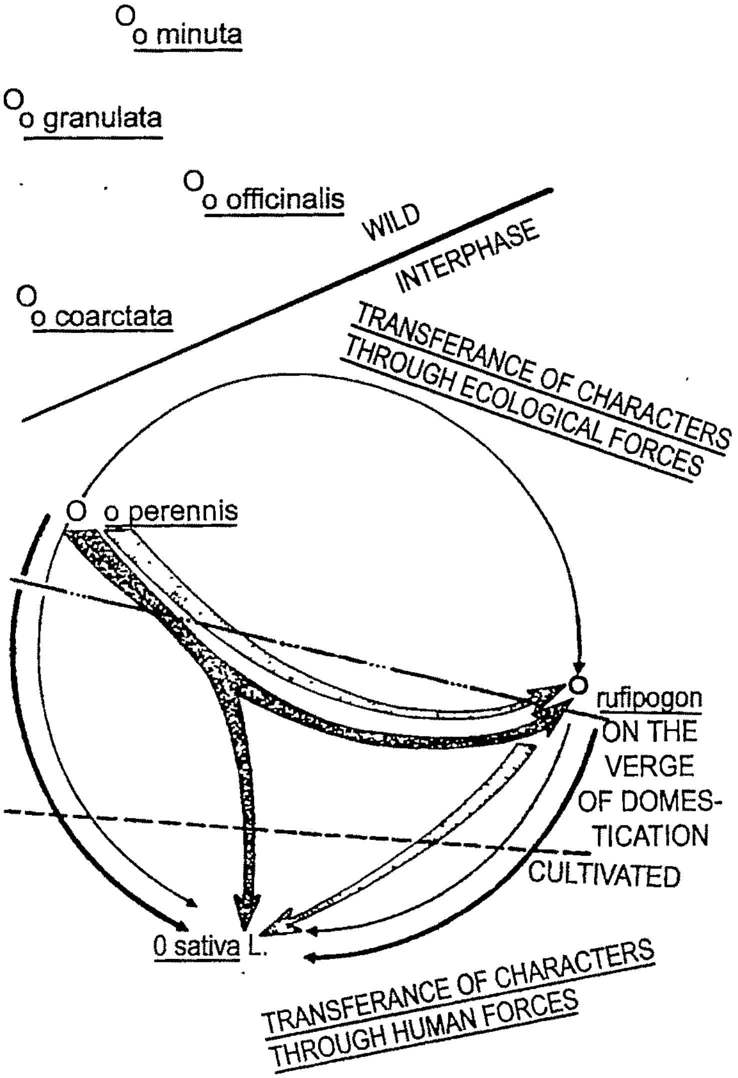
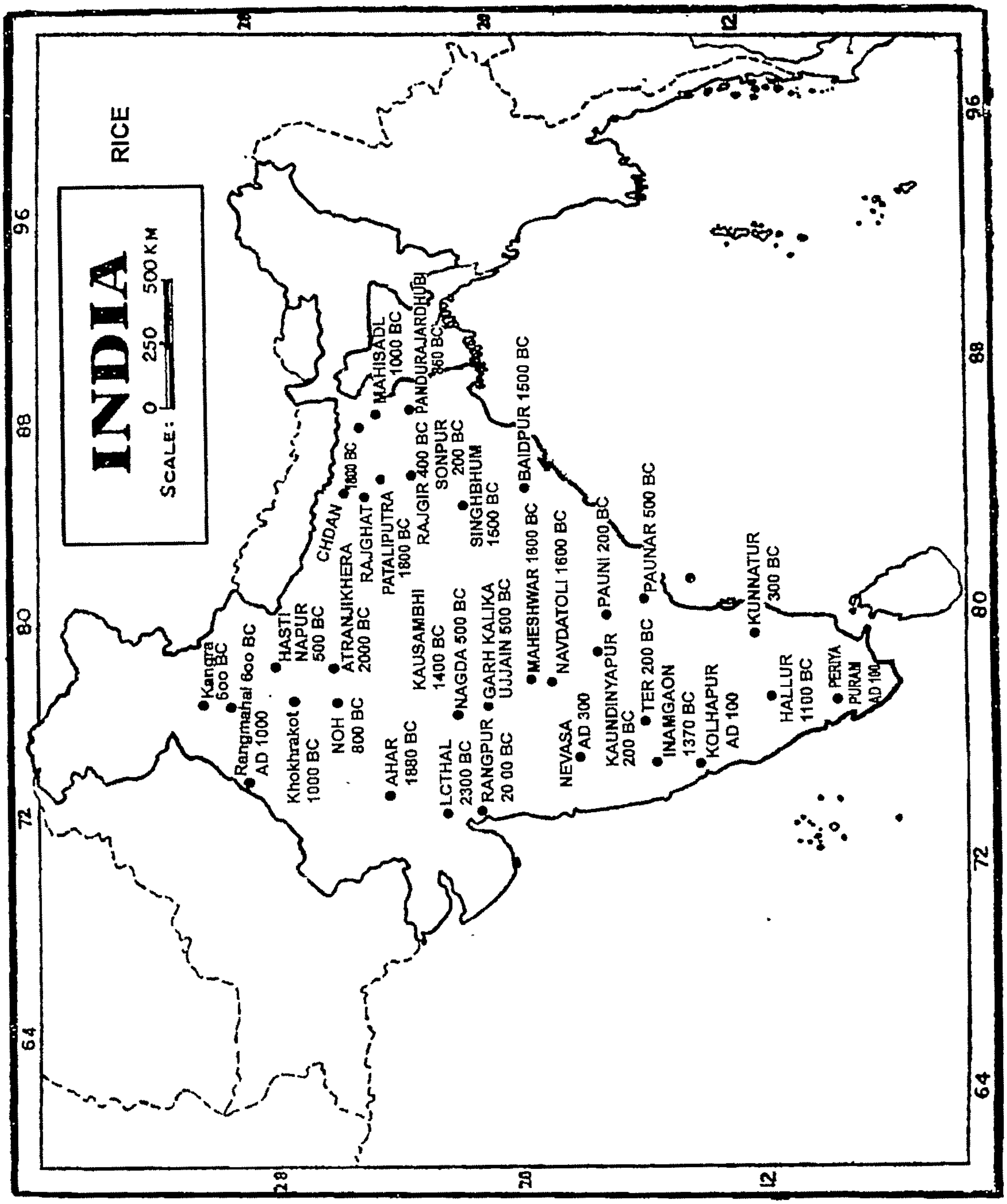

o minuta
o granulata
o officinalis
o coarctata
WILD
INTERPHASE
TRANSFERANCE OF CHARACTERS THROUGH ECOLOGICAL FORCES
o perennis
rufipogon
ON THE VERGE OF DOMESTICATION
CULTIVATED
0 sativa L.
TRANSFERANCE OF CHARACTERS THROUGH HUMAN FORCES

Figure - 4



Geographical distribution of records of rice together with dates in the Indian subcontinent.

THE ANTHROPOLOGICAL MUSEUMS : A STUDY IN RETROSPECT AND PROSPECT IN INDIA

Professor Dilip Kumar Ray

India is a vast country with checkered patterns of differing peoples, cultures, languages, etc. —it may be regarded as a veritable ethnological museum by itself. The unique geographical location of India being bounded in its three sides by open seas and being protected by invincible Himalayan mountain range at its north did not spare it from the repeated cultural and demographic invasions throughout its long history. The ethnic multiplicity and variations in the culture- patterns of .the sub-continent can largely be attributed to this factor. The successive influxes of the Greeks, Muslims, Portuguese, French and the British, among many others, as conquerors and almost from every country in North, West and East left some mark in turn either in physiognomy, culture or language or in modes of life of the Indian population. Such as, there are about 30 different groups of spoken languages and each group consists of one to five or more different dialects.

The multiplicity of ethnic elements an heterogeneity of culture-patterns in India, no doubt, implies co-existence of non-identical groups but also suggests inherent conflict between them which often ends up .in eventual assimilation of the weaker groups into dominant groups or lead to conflict of grave latitude. This process may be pushed back even to the first major Aryan invasion at about 2500 B.C. till it was somewhat given a new twist during the colonial rule under the British. They tried to isolate the remaining unassimilated groups or aborigines from the main populace not only on a compassionate ground but more as a handy step to administer a foreign country.

"But much water has flown down the Ganges since Marx and Metcalfe wrote, the 'Unchanging East'. During the decade and so since independence, the Indian social and economic pattern has undergone more changes than took place in centuries before it, each and everyone of them being, in Indian context, radical in its character and revolutionary in its effect. ....." (S.A.H. Haqqi' 65).

Besides, the splendid isolation and independence enjoyed by the rural and tribal communities during the ancient and medieval times, the twin process of industrialization and urbanization have brought the towns and the villages and tribal belts nearer to each other and shaken the complacence of traditional ,modes of life. "The city acts as a center of new freedom from customary controls and beliefs. Going back to village, the peasant carries elements of an "urban" intellectual ferment and disseminates this ferment among those who have remained tied to the soil." (Robert I. Crane' 56).

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It is interesting to note that what should be the right attitude particularly to the tribal people and Scheduled Castes, who comprises more than 20% of the total population of India, was debated long before scientific anthropology was even thought of in India. In recent past we found that three different approaches were made to this problem. Those who believe in the myth of the 'Noble Savage' and also by those who believe that contact of civilization had an adverse affect on tribal culture and art suggested complete isolation. In sharp contrast to this philosophy is a policy of assimilation into the main body of Indian populace. Hindu social reformers and also the Christian Missionaries, from a stance of superior cultural level, desired to see these tribes civilized by moral customs to the sacrifice of their own. The third policy is a compromise between other two extremes. It advocates that they should be helped to develop themselves in such a way that will least disturb their traditional ways of life and also activate and develop all that is good in them. These diversity of policy matters no longer remained within the purview of the theoreticians which is clearly evident in the Article 46 of the Constitution of India, which says, "The State shall promote with special care the educational and economic interests of the weaker section of the people, and, in particular of the Scheduled Castes and Tribes, and shall protect them from social injustice and all forms of exploitation."

Despite all these precautions and safeguards under the tutelage of State, different cultural forms and manifestations have disappeared and are threatened with extinction due to inevitable concomitants of economic development and modernization.

Against this background the stupendous importance of anthropological museums cannot be overemphasized. These museums, no doubt, are also potent to help in other areas of present appalling situation in India — a situation of crisis in population explosion, in national integration, in trying educational dilemma, which is accentuated by a bewildering advancement of technical accomplishment. The museums do not seek to promote isolationist or no-change policies; the advance of technology cannot and should not be stopped; villages and tribal areas are not to be protected from the material improvements provided in towns and cities, nor from exposure to scientific and technological rationally (Sri Lanka Seminar, December, 1977) . Museums can break fresh ground in collection, preservation, documentation, research, presentation and building up of public awareness with a respect to traditional rural and tribal cultures. These are potentially one of the most effective mass media for making great number of people aware of the features of the biological and social sciences and in helping them overcome their irrational attitudes towards past, present and the future (Borhegyi, 1968) .Talking singularly the problems relating to tribal groups and the question of their integration with the mainstream of Indian populace, there should be two distinct levels of interaction between museums and their prospective clientele. One category of museums should work at the level of the tribal communities and their services should be geared for the benefit of and to the need of the tribal. These museums should be located in places of greatest concentration of tribal population and their policy, presentation, and other services should be motivated to identify the problems of the tribal population at different levels of technological, economic, and cultural development and also to identify the integrative forces in tribal life. These museums will also project life and culture of other neighboring tribes and non-tribes to eliminate misunderstanding and mistrust between tribes and non-tribes. At the same stroke it needs great caution in exposing the tribes to the advance technology of the modern societies lest they develop a complex to undermine their own culture as ludicrous to that of the modern people. This will be disastrous. The ultimate aim of these museums should be to offer help and assistance to these naive tribes to prepare themselves to develop their own appropriate technology. These museums can help in a great way to rejuvenate their decaying age-old arts and crafts and in creating awareness in them and a market for their handicrafts to make it a viable economic pursuit. The ultimate aim is to elevate them to the same level with the rest of the nation without destroying their self-reliance and self-confidence as well as their self-identification.

The second category of museums and their services are to be tuned to the level of general Indian populace and hence, these are to be established in the cities and towns. These museums, on the basis of their status, as Local, State, Regional or even National will study and display different cultural aspects of the area they cater to. It will project tribal lives and cultures in their varying facets of technological, economic and social manifestations. These museums will serve as an eloquent reminder to their wider visitors that the story of the tribes bears directly upon the intellectual, industrial and social state of so-called advance people and also explain to them the gradual transformation of savagery to civilization; that the material and technological progress, which is now reckoned as the yardstick of today's level of cultural sophistication, have passed through a stage of crude and simple form as Sinha said, "We can in contrast envy the wholesome grasp of their relationship with the environment that every Onge, every Hill Maria, and every Juang have" (S.C. Sinha, 1974.).

One of the prime missions of the discipline of anthropology is to explain the importance and value, and worth of national heritage and also to interpret inter-reliance and convergence of civilizations, cutting across racial differences, then we cannot but think of a National Museum of Man as a vivid expression of this objective. National museum is a class by itself and it works both at the national and international levels. At the national level it will study and document all-important features such as, arts, industries, customs and beliefs, local differences in physical and cultural characteristics, the development of technology and the survival of primitive forms of technology. It will also project how each section of large population contributes to the making of India as a nation. This will evidently call for making an immediate inventory of what is in danger of disappearing and to select which cultural features can be conserved and adopted to new situations. A realistic documentation programme should be taken up to study and document all-important features of endangered traditional cultures including the important aspects of the process of cultural change (Ray, 1967, 1978).

The ultimate aim of these types of museums, apart from cultivating the national feeling and salvaging the national heritage, should be to foster universal brotherhood. A human is a gregarious social being and his healthy development depends on interactions with his fellows Mahatma Gandhi once said, "I do not want my house to be walled in all sides and window to be stuffed, I want the cultures of all lands to be blown about my house as freely as possible.'

Whatever category an anthropology museum may belong to, it renders an important role in the area of vital academic interest. The people of India belonging to a number of non-identical ethnic groups and to various cultural levels ranging from the most primitive to the advance provides a most valuable mass of material for developmental study of racial composition and for the study of cultural evolution. It appears paradoxical that at time when India has successfully entered into the space age, some of its people are still practicing an upper-Paleolithic type o hunting and gathering economy- cultivation in any form is not known to them (Sinha, 1974). This unique opportunity, if properly employed by anthropological museums, could be a wonderful basis for the study of the 'past in the present' and thereby, would make the past understandable, the present meaningful and the future to look forward to. For this we have to be very prompt to indulge in a scientific and systematic collection drive to gather as quickly as possible specimens depicting and illustrating tribal ways of life, costumes, audio-visual recording of music, dances and ceremonies. Many of our invaluable and irreplaceable specimens rendered useless due to lack of accompanying documents.

All said and done, it becomes imperative that knowledge of traditional cultures is indispensable to understand the contemporary developmental process and even future developmental possibilities of our population. In conclusion, to quote E.B. Tylor, ''No human thought seems so primitive as to have lost its bearing upon our own thought, or so ancient as to have broken its connection with our own life.''

[Based on author's presentation at the Symposium of the International Anthropological Congress-Commission on Museums at Vancouver, Canada-1983]

LOCAL MUSEUMS IN WEST BENGAL — A HISTORICAL OUTLINE

Prof. (Dr.) Samir Kumar Mukherjee

1. Introduction

The city of Calcutta (now renamed as Kolkata), once the administrative headquater of the East India Company and later of the British Empire between 1772 to 1910 can boast of having the first museum in India established at the Asiatic Society in 1814. The museum movement at Calcutta did not remain confined within the British India alone. Serampore, only 20 km. north-west of Calcutta on river Hooghly under the Danish control led the way in this direction. Rev. William Carey and his close associates like J. Marssman and W. Ward founded a museum and a library at Serampore College in 1818. This was later known as Carey Museum and Library. This museum located in a small town having rich colloection of rare manuscripts, examples of early printing in India can be regarded as the first local museum in India.

Local museum having a rich treasures of archaeological relics came into existence at Mathura (known as Muttra to the Britishers) in 1874 under the initiative of Mr. F.S. Growse, ICS, Collector of Mathura. This pioneering venture to establish a museum primarily of local interest may be treated not only as the first local archaeological museum in India but also a forerunner of archaeological site museums that became a distinctive feature at the beginning of the 20th century. Sir John Marshall, Director General of the Archaeological Survey of India, (1902-1928) was instrumental in establishing a series of archaeological site museums at many celebrated historical sites that he excavated, prominent of which are Sarnath (1904), Pagan (1904), Mandalaya (1905), Nalanda (1917) and others. Thus the site museums established near an ancient site or monument under the natural surroundings may be regarded as a local museum. This epithet is aptly justified because of the fact that the scope and collection of this type of museum highlights the importance of a particular locality and upholds their character as a celebrated site. The prime objective of establishing these museums was to make people aware of the rich cultural heritage and tradition of their localities or areas where they live for years.

2. Period of Popular participation

So far the growth and development of local museums in Bengal in the beginning of the 20th century is concerned, it was mainly due to the growing national conciousness emerging out of the 'Swadesi movement' due to the partition of Bengal in 1905 and the sense of pride in India's rich cultural heritage. We can cite the case of the Bangiya Sahitya Parisad (Bengali Literary

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Society) that played a leading role in this respect. The enthusiastic members of the Society organized an exhibition on Bengal's past glory on the occasion of the meeting of the Indian National Congress in 1906 at Calcutta under the presidentship of Dada Bhai Nouroji. With the success of this exhibition, some energetic members of the Society decided to have a permanent museum, the aim of which was to impart education through exhibits and to preserve the cultural properties. As a result, a small museum came up in a rented house of the Society in 1909 at North Calcutta. The interest shown by scholars primarily indologists, educationists, influentical zaminders and a member of the Indian Civil Serivce towards the country's rich cultural heritage and tradition fostered to the growth of regional or local museum in some district towns and sub-divisional headquaters. In this respect, the name of **Varendra Research Society of Rajshani (1910)** (Now in Bangladesh) established **under the initiative of Kumar Sarat Roy of Dhigapatia and Akshya Kumar Maitra** deserves mention. Of course it is to be remembered that easy availability of archaeological relics like sculptures, architectural fragments, temple terracotta plaques, inscriptions, coins, seals and sealings in various parts of the country cought the popular imagination and gave immediate impetus towards the establishment of local museums.

3. Post-Independence Phase

Independence of the country in 1947 further hastened the growth of local museums in West Bangal. This period is also marked by the growth of museums devoted to science and technology. There is no doubt that museums on history and archaeology become increasingly popular. The growing awareness among some enthusiastic local antiquarians towards collecting and preserving antiquities and works of art from their localities or peripheral areas was the prime reason behind the growth of local or regional museums. This kind of venture has also been taken up by some colleges, schools libraries, even local clubs. It is true that many of the collectors are not experts in the field but their enthusiaism and zeal to uphold the glory of the local history and rich culture of the locality were the guiding forces in this regard. By way of raising funds from public, many museums came up at some places of West Bengal. Of course in many cases they receive financial assistance from local bodies, Directorate of Archaeology & Museums, Govt. of West Bengal, Victoria Memorial Hall, Kolkata, National Museum, New Delhi. There are some practical problems in running these museums which may be discussed in brief.

(a) Financial Problem : Most glaring problem faced by these museums is fund. Sometimes financial assistances are available from the State Government, National Museum and other institutions. But these assistances are restricted to some previlaged museums only.

(b) Staff Problem : Most of these museums are run by a skeleton staff. In most cases they are ill paid and grants are irregular and inadequate. As a result, no development is possible.

(c) Management Problem : Most of these museums are not properly managed. A few museums run by the financial assistances of the Directorate of Archaeolgy and Museums, Higher Education, Govt. of W. Bengal Local bodies are in a better position than others under educational institutions or under private possession or under a trust. There is no scope for conservation and even for proper documentation of antiquities within their collection.

(d) Lack of Expertise : The organizers in many of these museums do not have expertise in the field. Sometimes they seek the help of experts from big museums, Universities. Some of the the organizers occasionally arrange for seminers with their limited budget. A few even venture to publish booklet, guide book or even bulletin.

4. A short description of some local Museums

1. **Carey Museum and Library (1818), Serampore, Dist. Hooghly**
   The museum possesses a unique collection of rare manuscripts of early printing in India and abroad, some rock and minerals, manuscript copies of Hindu scriptures like Vedas and Upanisads commissioned by Carey. The pulpit used by Carey, chairs and tables used by him deserve mention. The museum contains books in all the major Indian languages printed during the 19th century at Carey's press in Serampore.
2. **Ananda Niketan Kirtisala, Nabasan, Howrah (1961)**
   The local museum under a rural set up grew up due to the zeal and enthusiasism of some antiquity and art lovers. The collections are mainly archaeology, art and crafts of the district.
3. **Gurusaday Museum of Bengal Folk Art, Joka, 24 Parganas (S) (1961)**
   This grew up out of the rich folk art and craft objects collected by Gurusaday Dutta, ICS and later he bequethed his entire collection to a Society. Dutta with his farsight and imagination was concerned very much at the gradual emasculation of the rural arts and crafts by the growth of technology and modern industry.
4. **Museum and Art Gallery, Institute De Chandernagor, Dist. Hooghly (1952)**
   Located 40 Km. from Kolkata on river Bhagirathi, Chandernagor was once under the French occupation and later incorporated into the Indian dominion under the Treaty of Cession of Chandernagor 1952. The museum itself housed in a historical building possesses rich treasures of French occupation here like period furniture, documents, paintings, besides some locally found stone sculptures of the Pala-Sena period.
5. **Rishi Bankim Museum and Library, Kanthalpara, 24 Parganas (N) (1954)**
   Situated in a section of the ancestral house of Bankim Chandra Chatterjee, pioneer novelist of Bengali literature. Has a collection of manuscripts of the author, letters, photographs and personal belongings etc.
6. **Acharya Jogesh Chandra Purakirti Bhavan, Bangiya Sahitya Parisad, Vishnupur, Bankura (1951)**
   Named after a great scholar of Vishnupur, the museum houses a rich crop of antiquities from Vishnupur and adjoining region from the prehistoric to the late medieval period. Rich collection of folk art and craft objects of the area, paintings, rare photographs, musical instruments of notable exponents of the Vishnupur Gharana.
7. **Akshay Kumar Maitra Historical Museum, North Bengal University, Dist. Darjeeling (1965).**
   The museum located within the History Department of the University near Siliguri possesses antiquities like stone sculptures, art objects manuscripts, coins, terracotta plaques etc.

8. **Amulya Pratnasala, Rajbalhat, Dist. Hooghly (1941).**
   Named after Pandit Amulya Charan Vidyabhusan, one of the foremost orientalists of Bengal, it has nearly two thousand antiquities from the region.

9. **Tamralipta Museum and Research Centre, Tamluk, Midnapur**
   Has a rich collection of prehistoric and protohistoric implements, seals, sealings, manuscripts, coins, terracottas from ancient Tamralipta and neighbouring areas. This has been taken over by the Archaeological Survey of India.

10. **Museum of Hamilton High School, Tamluk, Midnapur (1934)**
    Houses some terracotta figurines, plaques, coins, ceramics from the site of Tamluk (ancient Tamralipta).

11. **Sarat Smriti Sangrahasala, Panitras, Dist. Howrah (1959)**
    Houses personal relics of great Bangali novelist Sarat Chandra Chatterjee like original manuscripts of the writer. It has also the collection of temple terracotta plaques, medieval manuscripts, stone sculptures and examples of Bengal folk art and craft.

12. **Ramkrishna Math Museum, Belur, Dist. Howrah (1998)**
    This has been recently opened. Life and teachings of both Ramakrishna and Vivekananda are represented through models, charts and personal belongings.

13. **Sri Pravash Chandra Pal "Prachya Bhavan" Vill. & P.O. Mahanad, Dist. Hooghly (1985)**
    The site of ancient Mahanad is of considerable importance from archaeological stand point. Relics belonging to the Gupta and Post-Gupta periods recovered from the area are on display here.

14. **Sundarban Anchalik Sangrahasala, Baruipur, Dist. 24 Parganas (1979)**
    This local museum exhits quite a number of stone sculptures, icons, terracotta plaques, ceramics etc. of the Pala-Sena period of Bengal. It has also good collection of folk art and craft objects.

15. **Kalidas Smriti Sangrahasala, Joynagar, Dist. 24 Parganas(s)**
    Late Kalidas Dutta, a zaminder himself was an archaeologist. He explored many parts of Sundarban region of lower Bengal and collected huge number of antiquities.

16. **Balanda Pratna Sangrahasala, Haroa, 24 Parganas (North)**
    Late MD. Jabbar was a good collector of antiquities. He collected many antiquities from the site of Chandraketugarh and its neighbourhood. The collections are of considerable importance.

17. **Khari Chhatrobhog Anchalik Sangrahasala, Vill. & P.O. Kasinagar, P.S. Raydighi, Dist. 24 Parganas (South) (1986)**
    Some local enthusiasts collected stone images, teracotta plaques, art and craft objects from various parts of Lower Bengal that form the nucleous of this museum.

18. **Chandraketugarh Sangrahasala, P.O. & Vill. Debalaya, 24 Parganas (North)**
    The collections of Sri D.K. Maite centre round interesting finds from the site of Chandraketugarh like terracotta figurines and animals, seals sealings etc.

19. **Ramkrishna Ashram Library & Museum, P.O. Nimpith, P.S. Jayangar, 24 Parganas (South)**
Collections are from some archaeological sites of lower Bengal.

20. **Bhuvan Museum and Art Gallery, Parnasree Pally, Behala, Kolkata**
The museum grew out of private collections of an enthusiastic Bengali engineer of Kolkata. The scope of collections cover a wide range of archaeological and art objects from various sites of West Bengal.

21. **Katwa Purabastu Sangrahalaya C/o Katwa Sub-divisional Library, P.O. Katwa, Dist. Burdwan.**
This is primarily a museum devoted to archaeological objects from Mangolkot and Indrani, two leading sites in Burdwan.

22. **Paribrajak Panchanan Roy Sangrahasala, Basudevpur, P.S. Daspur, Dist. Burdwan.**
This grew out of the personal collection of a local gentleman, compising of stone sculptures, temple plaques, manuscripts etc. etc.

23. **Vidyasagar Smriti Bhavan Sangahalaya, Bangiya Sahitya Parisad, P.O. & Dist. Midnapur.**
The museum possesses a good collection of objects of art and archaeology from different parts of Midanapur and other places like stone sculptures, manuscripts etc.

24. **Rajanikanta Jnan Mandir Museum, P.O. Dharas, P.S. Contal, E. Midnapur**
Mainly archaeology, art and craft objects of the area.

25. **Rada Sanskriti Sangrahalaya, Bidisha, P.O. Phulgeria, Dist. E. Midnapur**
This is primariy an anthropological museum.

26. **Chandrakona Sangrahalaya Sanskriti Kendra, Raghunathbati, Ayodha, P.O. Chandrakona, Dist. W. Midnapur.**
Mainly archaeology, art and crafts objects are in the collection.

27. **Pingla Thana Mahavidyalaya Museum & Research Centre of Art, Archaeology & Natural History, Vill & P.O. Maligram, P.S. Pingla, Dist. Midnapur.**
Archaeology, art and crafts and natural history.

28. **Nabadwip Puratatva Parisad, Dantapanitala, P.O. Nabadwip, Dist. Nadia**
Archaeological relics from the ancient site of Ballalsener Dhibi, Dist. Nadia, documents, photographs, letters and correspondance of renowned persons of Nabadwip.

29. **Purulia zilla Sangrahasala Haripada Sahitya Mandir & Museum, P.O. Vivekanandanagor, Dist. Purulia.**
The collection is rich having medieval Jaina sculptures, architectural members of temples. The area was a medieval Jaina site.

30. **Jiyagang Museum, Jiyagang, Dist. Murshidabad**
Possesses a good collection of archaeological objects from Jiyagung and other areas of Murshidabad.

31. **Coochbihar Sahitya Shaba, Coochbihar, P.O. & Dist. Coochbihar.**
Has a favourable collection of archaeological and art objects from the area.

32. **Coochbihar Palace, Coochbihar**
This is a historic building of the Coochbihar rulers. This has been taken over by the Archaeological Survey of India, Kolkata Circle as a prospective site museum.

33. **Hazarduri Palace Museum, Dist. Murshidabad**
A grand historical building of the Bengal Nabas built in 1837. Very rich collections of arms and armour of the late Mughal period, valuable documents, objects of art and crafts, paintings and period furniture etc. This has been taken once by the A.S.I. as a site museum.

DISPLAY OF ENDANGERED WILD ANIMALS IN A MUSEUM GALLERY

Dr. Chhanda Das

The actual displaying of specimens involves so many complications that there can be no set, universel formula for tackling them. Firstly, the specimens regarding endangered animals displayed in the galleries or exhibition rooms should be arranged in such a way that they may serve the purpose and need of all types of visitors. It is, infact, difficult to come to a compromise between needs of the scholars or students and those of the general public. The student or scholar "approaches the exhibits with a body of information and with a definite aim in his mind what the exhibition presents to him is but a supplement to an already more or less defined pattern of meening" (Wittlin 1949). But for the general public both specimens and their explanations have to be supplied by the museum.

The success of an exhibition depends on the discipline, order and effect, produced by a certain calculated management. It also require very careful and skilled planning. The arrangement of the exhibits should be in such a way that all exhibits in a room may appear a harmonious unit; and it is necessary to take into consideration all the aspects of the exhibits and the exhibition room like the size of the room, the size of the specimens, the colour of the specimens, museum equipment, room lighting, labelling etc.

With regard to the display of rare stuffed wild animals in a public gallery, one of the most controversial item is the glass show-cases. The glazing of the diorama glass has certain practical advantages, particularly in our country where the range of humidity is very wide. It protects the dust and harmful chemicals containing air, produced from industrial waste. Moreover it prevents the public from touching the surface of the specimens. The most satisfactory solution, of course, is to make the galleries air-conditioned, which cleans the air and controls the moisture. Although it is very expensive and is hardly possible for our country to have large and costly air-conditioned rooms for exhibiting the threatened and rare wild animals, yet for maintenance of such invaluable exhibits it is advisable to have the rooms air-conditioned.

In India for small or local museums very little space can be alloted to exhibit the wildife specimens. Space and money are the impediments. Smaller museums can display wildlife to the public through panels, models, photographs, charts, maps etc.

In case of large museums the arrangement of the exhibits should be in a scientific manner as well as in a simple way. There should be spacious galleries for displaying specimens of endangered wildlife and their conservation.

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A good and interesting display of wildlife specimens depends upon the following factors :—

1. Panels
2. Show-cases
3. Visual Aids
4. Audio Aids
5. Diorama
6. Labelling
7. Lighting.

1. Panels :

Free standing panels are used for displaying posters, booklets, photographs, charts, etc. Versatile form of panels are extremely handy for quick packing or unpacking. It may be closed or opened and is provided with a depth within which shelves can be accommodated. Objects may be suitably arranged on such shelves. It is mainly used for travelling and temporary exhibitions. The objects are not removed while carrying the panels and thus they are given a protection from the danger of breakage, damage and theft.

2. Show-cases :

This is used mainly for permanent exhibitions. The show-cases form an integral part in effective display. They serve two functions :

A.Utilitarian

B. Aesthetic.

A. Utilitarian Function

From the utility point of view, provision of show-cases serve the following purposes :

(a) Protection

(b) Easy access

(c) Flexibility

(d) Visitor's comfort

(e) Easy vision.

B. Aesthetic Function

Apart form utilitarian function, the show-cases have the aesthetic function to perform so that the exhibition is delightful and not monotonous. They exert a recreational environment in which everybody from children to grown up people may take part, the purpose of display is never defeated.

Types of Show-cases

The main types of show-cases might be used in the permanent gallery for displaying specimens which may be as follows :

(i) Vertical show-cases.

(ii) Island show-cases.

(i) Vertical show-cases

The exhibits in the vertical show-cases can be seen conveniently by a visitor at eye level, while walking along the case. There are various types of vertical show-cases in which two main types are used in the wildlife conservation gallery.

(a) Free-standing show-cases

(b) Wall show-cases

Each type has a top and some kind of support (legs, a foot, a stand or a simple base) bringing the bottom of the case some distance above the ground level.

(a) Free-standing show-cases

When all sides of such show-cases are transparent, they are the most suitable for displaying tall or large specimens for the wildlife conservation gailery.

Large free-standing show-cases can be very helpful as a means of dividing galleries into sections and, if one of their long sides is opaque, its back may be used as a display panel.

(b) Wall show-cases

These show-cases are designed primarily for specimens meant to stand up, the back of which need not be displayed. The sides and the ceiling may be opaque, translucent or transparent. They may have bases similar to those used for free-standing show-cases, or they may be fixed to the wall.

(ii) Island show-cases

Island show-cases are similar to vertical cases and their contents can be viewed from all sides.

Background in show-cases

Much of the effect of wildlife galleries depend upon the background of the show-case wall or of the partition screens. This is so in most of the cases except the 'Island' cases where objects can be seen from all sides through glass. The better results are achieved by using fabric to provide a good background. Right colour, texture and design have to be chosen for increasing the aesthetic appeal, where a show-case is to be used for displaying different materials 'false backs' may be prepared, all of which can be easily placed in and taken out for storage and renovation. Whatever may by the colour chosen for the background, it must not be obtrusive.

The interior of the boxes may be lined with neat black paper in the case of light-coloured specimens and with white paper for dark coloured specimens.

Methods of display in show-cases

While presenting the museum objects a display in different types of show-cases described earlier, the manner of presentation should be methodical i.e., too much space should not be left open or congestion should be avoided. The following methods seem to be useful :

(a) No space should be wasted and the show-cases should be utilised to the best possible advantage so that dull and stuffy appearance is avoided.

(b) Subject-wise presentation of specimens.

(c) Neat, clean and compact display to give an aesthetic outlook and to produce curiosity and interest.

3. Visual aids :

Visual aids are also responsible for good, simple and thoughtful display of wildlife conservation.

A. Two-dimensional aids

i) Photographs

ii) Charts and graphs

iii) Diagrams and pictures

iv) Maps

B. Three dimensional aids

i) Models

A. Two-dimensional aids

i) Photographs – Photograph is a kind of still picture. It is the next best media approaching reality and is of two kinds : black and white, and coloured. It can show movement in well-defined and clear cut out stages.

The best method of displaying wildlife in a gallery is to have selected photographs of the portraits of the animals, their sctions such as hunting, feeding, group formation, nesting, parental care, etc. Photographs should be enlarged keeping more or less to the actual size of the animals.

As it is a flat object, it required some or other kind of vertical placement. The photographic transparency illuminated from behind make a special attraction.

Method of display :

(1) When a photograph is placed below the eye level, its upper portion should go further from the visitors so that the visitors may look without stooping.

(2) When the photograph is placed above the eye level, hung in a position that its upper portion comes forward, lower parts always should remain on the wall.

(3) To avoid monotony of the photographic display, the following principles are to be observed.

(a) Variation in size of numbers of photograph is displayed on the mounted board.

(b) In the same borad, variation of colour of photograph is used.

(c) Different types of planes for different pictures.

(d) Back light arrangement.

Photographs may be given background information to the actual exhibit by coloured line.

ii) Charts and graphs :

They are the important media as effectively as possible in museum display.

Chart itself is a monotonous subject. In order to make it attractive, use of colour and light will differentiate the position. Use of three dimensional symbols with the charts on mounting board, make the charts more attractive.

Graphs may be used to convey the idea of comparative study. As for example variation of numbers of one species with comparison to other species in successive years may be shown through graphs.

iii) Diagrams and pictures :

These help the visitors :

1. To give a general idea about the subject.

2. Extinct and vanishing animals which do not have any photograph can be introduced by painting and diagramatic illustrations with lebels also their habitat, distribution, status etc.

3. Habitat shrinkage leading to decimation of wildlife, effect of despoiling nature due to deforestation, agricultural extension in forest areas, crecting dams and dykes, setting of factories, mining etc., an wildlife can be displayed well by diagrams and pictures. These should be well-lebelled.

iv) Maps :

However small the museum, or limited its means, attention can be focussed on the situation of important sanctuaries and national parks in India by the display of maps. Basides this past and present distribution of endangered animals may be displayed through maps.

B. Three dimensional aids

(i) Models :

A model is a conscious re-aiding reality which resembles the original exhibits in broader aspects. The museum can give valuable aid and incidentally provide an exhibit which may be made attractive through models.

Actual or life size model of the endangered animals may be used instead of original exhibits and should be displayed at the eye level whenever required.

4. Audio-aids :

By audio-aids, display will be more effective and interesting to the visitor.

The types of aids can be used in the display-gallery.

(1) Earphone

(2) Stillographs.

(1) Earphone :

Sometimes the labels fixed on the exhibits on display, are not sufficient enough for interpretation. Services of gallery guides are then required. In order to further simplify the process the earphones should be used in natural history museums. If a visitor wants to know more than what has been written on the label, he can switch the button and can hear the commentry on earphone.

It has a few advanteges :

(a) The visitor will get an uniform explanation of the respective exhibit.

(b) There is no chance of disturbance on the part of other visitors, as it is restricted to one person only. Its only handicap is felt when there is a large crowd. Individual service then becomes difficult as it takes much time to move from one exhibit to the other.

(2) Stillographs :

It can made the display more effective. It is one type of a movie machine with a sound box. The various aspects of wildlife can be shown in the form of picture. The call of various endangered animals, birds etc., or cacophony in a jugle recorded bring the forest environment to the public in the gallery. It helps the visitor an elaborate knowledge of the particular subject.

Besides this the latest communication methods like video films, cassetes, CD etc. may be employed by the museum for better and effective display.

5. Diorama :

A Diorama is a miniature, three dimensional exhibit using small objects, modelled figures and background in perspective against an appropriate setting. The specimens need not be done to scale, the differences in sizes are exaggerated from front to back in order to creats an illusion of depth and distance. Sometimes artificial lighting at the back or some significant points enhances the vividness and realism of the dioramic display.

Dioramas are essential visual aid where learning involves a third dimension. They make experience more impressive, deep and memorable. All types of visitors like children, general public, specialists etc. are very much interested with the subject of natural history. Through diorama the museum authority can exhibit the various aspects of wildlife such as animal habitat, destruction of forest by man, scene of a sanctuary or national park etc. to give a bird's eye view about utility and importance of wilflife conservation to the general public.

The diorama is a stereoscopic painting, rather than a coloured model and undoubtedly gives a more vivid impression than a picture in that being partly modelled. For the general purposes, the most suitable dimensions are 1.524-2.133 metres long, 0.7616 metre deep and 1.2192 metres height with the horizon line, 1.524 metres from the floor. These dimensions were found to give satisfactory results with this subject and, except for one or two special subjects are generally adopted throughout the museum. It is thus possible to design a standard case capable of housing any one of the dioramas, an arrangement whereby change and variety can periodically be introduced into the displays with the minimum of trouble and expense.

Method of display of diorama

There can be no doubt that the ideal site for installing dioramas is against the walls of a darkened gallery.

6. Museum label :

The good museum label should be like the good secretary; always available but never unduly obstrusive. The labels are parts of exhibits, not additions to them, and should be planned with it. Museum labels bridge the gap between expert knowledge of public comprehension. When labels are poorly designed or badly mounted, exhibits fail to make the full impression expected of them. The problem of visual communication in an exibition demand that all three elements design, technical preparation and labels – be unified whole, with each element brought to perfection and complementing the others' (William 1960). So label writing becomes an important and difficult task, important because it is the link between the curator and the general public and difficult because it should be written in such a way as it may create and rouse interest in the subject. The average visitors do not come to a museum for instruction, the curator's aim will be to create an awareness of the interest attaching to the specimens. 'It is the purpose of the label to encourage visitors to seek information on matters in which their interest has been newly aroused by the exhibits' (North, 1957).

There is no doubt that label is the integral part of the exhibit and cannot be treated as a separate entity. The placement, its part in introducing and explaining a specimen have to be taken into consideration. Its description should be capable of satisfying at least the four curiosities of the visitors : what? when? where? and who?

Patchiness often results when each label is prepared solely in relation to an individual specimen; in such circumstances shape and size are apt to vary capriciously. Uniformity of size is possible and, indeed, desirable in the labels for a series of specimens that are more or less similar in shape and size, but well balanced combinations of large and small labels usually give the best effect.

Making labels conspicuous :

It is sometimes desirable to make one or a few labels conspicuous in a case, or to make all of them inconspicuous. Labels may be made conspicuous by :

(a) Size

(b) Position

(c) Boldness and lettering

(d) Use of a border

(e) Relation to the colour and texture of the background.

It is unnecessary to say more about the first two of these methods since their control and application are so obvious. The third may be taken to include not only the use of large letters or any other eye-catching device such as fluorescent labels on glass. The fourth and fifth relate to practices that call for cereful consideration.

If a border is needed, a good plan is to use for it a darker shade of the colour used for the background, or for the label itself if it is on tinted paper.

Making labels incospicuous :

Labels may be made inconspicuous :

(a) by their situation, e.g., flat on the shelf or ledge on which the specimen rests, so that they can either be read or disregarded at will; or,

(b) by using paper closely similar in shade and texture to the background.

Careful consideration of the appearance of the finished exhibit is necessary when it is intended to adopt the former of these methods. Labels so placed are often too high to be noticed at all by persons or less than average height, and the apparent absence of labels may create the impressing that one is looking at an unfinished exhibit. This can usually be avoided by the introduction of a suitable compressive lavel in a place where it is bound to be seen.

Choosing the place for a label :

It should be, but observation shows that it is not, superfluous to say that since a label is intended to be read, it must –

(a) be in type large enough to be legible at the distance it will be placed from the visitor,

(b) not be in a dark corner or obscured by a large specimen,

(c) be so placed that, the visitor will not require to step a ladder in order to see it.

Many labels, even in large modern museums, are too high to be read by people of average height, or too low to be read by anyone in a comfortable position, or farther away at the back of a deep wall case than is appropriate for type of the size that has been used. But observation shows that the limits within which an average explanatory labels can be read confortably by a standing adult are not less than about 0.7616 metre or more than 1.3288 metres from the floor, and not more than about 0.3048 metre from the front of the case.

When large specimens have to be exhibited at a low level there should be no objection to placing the labels above them, even if the general practice is to have the label below the specimen. There are occasions when it is better to be reasonable than consistent.

It is desirable that labels should be on approximately the same plane as the specimens in order to avoid constant change of focus. This good rule is often broken when objects are displayed in deep wall-cases and the labels, fixed to be back of the case, are in type of a size more suitable for use in situations that are comparatively near the glass.

A satisfactory placed label leaves the visitors in no doubt concerning the specimen to which it belongs, but when large objects are arranged against the undivided back of a wall-case it is not always clear whether a label relates to the specimen above or the one below, to the specimens on the right on those on the left.

A common means of remedying this defect is to use stripes of wood, cord, paper or, better still, thin threads of coloured plastic material to divide the background into panels, each for the reception of one specimen or group of specimens and its label, but there are possibilities of mixing up. The use of sub-divisions makes it possible to place things closer together without fear of confusion than on an unbroken background; this may lead to overcrowding and often results in the development of a patchy appearance, e.g., when there is much variation in the shape and size either of the panels, or of the labels when those for each panel have been conceived independently.

Preparation of labels :

Labels look and remain neatest when they are mounted on glass, and kept in position by means of pins (brass or white metal, never steel), driven into the backboard, bent over, and nipped off level with the surface of the glass so as to be almost invisible.

A label so mounted always remain perfectly flat, and two pins below and one at the top are sufficient to keep it securely in position, whether it is used on an upright panel or on the floor of a table-case. Glass mounted labels and diagrams can also be supported vertically or steeply inclined upon shelves without fear of warping. They can be kept in position by short lengths of pin driven into the shelf or supported in grooved wooden blocks.

For the smaller labels old photographic glass can be used, and for the larger onces thin window glass. The glass should first be covered with tinted paper with suitable border.

A piece of the tinted paper to cover the whole of the back should be added in the case of lavels that will be so placed that their backs will be visible.

Cut-cut letters in wood or wood substitute have been successfuly used for title labels.

Labels may be handwritten, type-wirtten or printed. Stencilled labels can also be sued especially for the larger letters of titles or heading labels.

What the lavel should say :

Museum labels may converiently be divided into four main classe.

Heading or title label :

Title label is mainly the name of a gellery, e.g. Wildlife Gallery. The necessity and justification of the heading label is to differentiate its identity from the rest of the galleries of the museum.

It should always be conspicuous and eye catching and in non-scientific language so that it can attract the visitors to the gallery. This label in no case should be lengthy in comment, but not so brief as to become almost unintelligible. Three dimensional letters in white against black or green back-ground becomes prominent. Cutout wood letters of standard big size may be used to make it easily visible from a certain distance. This is to be fixed at a proper place such as the entrance door or any conveient place. For a big natural history museum main heads may be as follows : (i) Wildlife gallery I; (ii) Wildlife gallery II; (iii) Geological Gallery; (iv) Botanical Gallery etc.

Introductory label :

Introductory label introduces a gallery or series of exhibits in a very comprehensive manner. This label can answer the basic questions which may rise in the mind of visitor about conservation of endangered wildlife. It should comprise mainly of two parts : (i) the heading and (ii) the text. The heading should be about what is essential in the text portion in a simple and lucid form. For instance, the heading of the introductory label which speaks about the preservation of wildlife as an integral part of human responsibility. Total literature should not exceed 150 words. In the text part how protection of wild animals had been possible. The explanation should be offered in a lucid, simple and intelligible form. This should not be unduly long or short in form. Two types of letters may be used in this label as to differentiate the heading and the text part of the label.

Introductory label should be placed in a conspicuous area, so as to draw immediate attention (at an optimum height in a well lighted place).

3. Group label :

A descriptive group label mainly designate a particular group of animal i.e. mammals, birds etc. So this label helps the visitor to know and learn about a particular group of animals from the rest. From this label visitors can know the role of mammals, birds etc. in the forest ecology and also in the human economy.

The placement of this type of label should be on or near the beginning of the particular group of animals. This label should be catchy and easily visible from certain distances.

Information should be specific and desirable and description should be given in a lucid language.

Individual label :

The label related to individual specimens gives generally a few routine information. In case of mammals, individual label should possess the following data :

1. Name of the mammal (Popular name/scientific name)

2. Systematic position (i.e., Phylum, class, order etc.)
3. Habit, habitat, distribution, status and specific information.
4. Cataloguing No. (in case of stuffed specimen).

It should be placed either just below the exhibit or very near to the exhibit so that no one may confuse if other labels relating to other exhibits.

Individual label will help to realise the individual character, so the short description in this case is important and it should be made carefully. Telegraphic words should be avoided as far as possible.

Since the scope of the effectiveness of a label as communication medium is limited to a very low percentage of visitors who can read the language of the label, visual elements like pictures, maps, charts, sketches should be largely and widely used. In short, a label should never be in direct competition with the exhibit.

Museum lighting :

Museum lighting may be broadly divided into two categories natural lighting and artificial lighting. Artificial lighting can be grouped further into room lighting and object – lighting. Sometimes natural light may serve both the purpose namely. room – lighting and object – lighting. But for smaller exhibits, object lighting, or spot lighting is essential. The purpose of room-lighting, besides keeping visitors from falling on the objects, is to make them feel at ease and to provide conditions under which object-lighting can be carried successfully. The specific purpose of object-lighting is to show objects clearly and in their original character, and must be in addition to the over-all room-lighting. Generally, the 'mixed light' – that is light coming partly from the sun and partly from the lamps – serves both the purposes.

Monitors and inverted monitors have been used for lighting gallery walls without over lighting floor. "The monitor is formed ceiling raised above a band of windows on either side of the monitor give light to the opposite will of the room below" (Coleman 1950). The inverted monitor is a box-like from which is hung from the ceiling of a top-story room, with windows on each side of the box giving light to the walls at the same side of the room.

For some practical advantages artificial lighting is becoming more and more popular. Under ideal exhibition conditions every aspect of display is controllable. Artificial lighting which can be focussed, moved and coloured, and which is independent of the weather, is therefore the best exhibition lighting.

Types of artificial light sources :

The two main types of artificial light source are fluorescent and filament lamps. Fluorescent lamps are all extremely economical and provide a general shadowless flood of light.

Fluorescent lighting has come into very wide use, because fluorescent lamp has a luminous effect and yet, it is cool. It cannot be focussed or used to project parallel beams of light. Louvres can be used to reduce glare, but these do not, of course, direct the light in any way.

Filament lamps are less economical than fluorescent, but more flexible in use. They are therefore particularly useful for special lighting effect. Frosted filament lamps can be used in lines for general light, giving an effect similar to flucrescent lighting but warmer and less defused.

Lighting in show-cases :

The most useful aid to any display is good lighting and the internal illumination of the show-cases presents some of the most interesting lighting problems in a museum. Not only is the position and colour of lamps important but the selection of background colour is equally so.

Time spent on a few experiments to find the right contrast to the exhibits is always worthwhile, as also is the positioning of exhibits in relation to the light source.

It is good parctice to provide for both-top and side lighting in a show-case of modern design If each lamp is separately controlled by plugs and socket, the exhibitor can then arrange either top or side lighting or a combination of both at will. thus, when a number of show-cases are controlled by a master switch, only the pre-set lighting scheme comes into operation.

Island cases present a different problem because the case can be viewed from any angle therefore the lighting equipment must be screened from any viewing position. The glazed top method was tried out in a number of instances and the objection was that the ceiling brightness was two high for comfortable viewing; moreover, the obscured glass prevented the amount of light required reaching the lower portion of a tail case.

Lighting of show-cases which have a diorama to give the effect of a natural setting, mus be treated carefully. The diorama should be painted under the same form of lighting as wil be used eventually. This applies in particular where fluorescent lamps are used because even a slight variation in colour can upset the perspective effect the artist intended to convey.

A word should be said about the heating effect of artificial lighting inside show-cases. The heat generated by 80 watt fluorescent lamp in a case of small cubic capacity has been found to raise the internal temperature by as much as 20^{0}F above ambient in a few hours, falling rapidly occurring every day could be most harmful to stuffed specimens, especially if humidity varied in unison.

Glare :

In dealing briefly with the question of reflected glare, it may be mentioned an example Pendent light sources invariably "match" the viewer's eye level, causing reflected images of lighting fittings that distract the viewer and impair visual sctivity. The only cure is to locate the fittings at a higher level.

Arrangement of exhibits :

The way in which the collections are exhibited will probably depend upon the amount of time, space and money that can be alloted to the display. A really good exhibit depends considerable thought and careful planning if it is to be shown to the best advantage.

Hypothetivally two permanent galleries are suggested for displaying wildlife specimens which are related to conservation of endangered wildlife in a museum.

Wildlife gallery I

The gallery of the museum may represent endemic types mostly rare and endangered animals. The importance of conservation of such animals is to be emphasised. This would bring awareness among the public about wildlife conservation. In this gallery the habit, habitat, status, reasons of depletion and control measures of endangered animals may be displayed through charts.

Cubs, calves, pups and subadults of these rare animals mentioned above may also be displayed to attract attention of children to give them pleasure and make them interested in wildlife through model if stuffed specimens are not available.

For threatened birds with their nests and eggs may be displayed in the gallery. Stuffed and mounted birds if available would be ideal exhibits otherwise coloured photographas or drawings would serve the purpose. These types of exhibits will be more attractive to all sections of visitors if birds with their recorded calls are played and tuned from time to time.

Wildlife Gallery II

The gallery II may deal with various aspects relating to conservation of forests and wildlife.

Man has modified the habitat of animals by cutting trees, erecting dams and dykes etc. and also destroying wildlife by hunting and poaching setting an imbalance in the ecology of the area. Some endangered animals like the lion tailed macaque, the Nilgiri langur, the Indian tiger, the Asiatic lion, Indian wild ass, one-horned rhinocercs, great Indian bustard, Bengal florican, crocodiles, gharial etc. which occupied larger territories in India have now been confined to small pocket in sanctuaries and national parks. Such exhibits in the proposed gallery depict these aspects with example. Distribution maps on animals past and present will explain the shrinkage of habitats.

A large forest diorama may be exhibited in the gallery with rich wildlife in one side and on the other side a scene of destruction of forest due to cutting down of trees by man.

Natural habitats of large animals as tigers, rhinoceros, deer etc. may enlighten the general mass of the ways of living of animals in the wild. These may be displayed through diorama.

Food chain among plants, herbivorous and carnivorous animals may also be exhibited to aware the public about interrelated food chain and also inter specific competition for survival of the fittest. This can be done through diorama or models.

Besides these two galleries mentioned above, museums may establish a separate space for children. This will be the informel activity area where the childern will touch specimens and participate in making modelling and painting about wild animals.

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ROLE OF BOTANICAL SURVEY OF INDIA IN PROTECTING INDIA'S NATURAL HERITAGE

Dr. Mahua Chakrabarti

India is one of the few most diverse biographic regions of the world. Her rich and unique biodiversity encompasses different topographical and climatic conditions along with a large variety of habitat groups such as humid tropics, hot-cold deserts, warm coast line, grand Himalayan mountains, tablelands and plateaus in the Vindhyan ranges and the Western and Eastern Ghats; the deep valleys and foot-hills of Assam; Central Indian high lands; the alluvial plains of North and the lower terrains of Southern India. The Indian subcontinent includes a variety of flora and forest types within her boundary, which are unparalleled in the world. India stands first amongst the twelve mega-diversity countries of the world and she has about 45,000 species of flora and around 89,000 species of fauna. Biological diversity makes the material basis of human life on the Earth. Thus its conservation is necessary for keeping up of the Biosphere in a condition essential for human existence. We are now well aware of the fact that the species, which we destroy at this time, may have likely benefit for tomorrow's food, fodder, and medical science or as raw material for manufacturing, which is today not discovered. It was the Government of India that was attentive to have an institution as the keeper of country's floral resources. Thus the British established the Botanical Survey of India in 1890 at Royal Botanic Garden, Kolkata. At the initial stage it had a very confined purpose but shortly after independence the Government of India rearranged the Survey and its aims and objectives were re-outlined and expanded.

During the second half of the sixteenth century the usefulness of medicinal quality of plants incited the training of Medicine in North Italy, with contemporary evolvement of 'live' and 'dry and preserved' gardens. These dry gardens preserved dried and mounted specimens, in exact sequence and were used as support to teaching of plant science. In a short time medical experts spread out same activities to countries outside Italy. Before the formation of East India Company in 1599, in India there had been a botanical search. Gercia da Orta, a notable Portuguese doctor came to India in 1534, he studied the drug plants, narcotics and other economic species developing them at his residence at Goa. He furnished much to the plant resource of our country in trade, local use, and to these, he had also added certain plants, new to science. At the time of the East India Company van Rheede (1667), Governor of the Dutch Settlement in the Malabar engaged himself to the study and collection of plants of this region. He gathered valuable dried and mounted specimens from various places in Southern India. His memorable contribution, **Hortus Malabaricus** (1678-1703) in twelve volumes is the primary work on the systematics

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on Indian plants, which Linnaeus himself declared "accurate". The East India Company, which had its own physician and surgeons, engaged them in the collection of plants from Madras, for the end of cultivation of these exotics in the homeland.

Attention in botanical collections increased substantially in the eighteenth century and different organizations being eager in the exploration of plants from the Southern, Western, Northern and Eastern parts of India, and too from Assam and Burma (Myanmar). Churches, medical experts and servants of the East India Company were all energetically employed in investigation into forest areas for the collection of plant materials. Among the principal contributors mention may be made of Koenig, Roxburgh, Hayne, Wight, Campbell, Thunberg, Buchanan, Wallich, etc. The collections made by them used to be sent to Linnaeus, Sir Joseph Banks, Hooker and others.

Concurrently with botanical studies, horticulture also obtained prominence and at specific selected places new botanic gardens were set up for the purpose of introduction of cultivation of exotic species. Botanical gardens at Sibpur (West Bengal), Pune (Maharashtra), Saharanpur (Rajasthan) and Chennai (Tamil Nadu) under the local Governments. These were instituted for farming of plants of importance in commerce and trade. These centres have been intended to be the fountainhead of botanical knowledge also. Each garden had its herbarium - keeping dried specimens for source. It is interesting that the accomplishments made during this period concerning the study of plants were mostly by personal attempts but not by any kind of central authority or institution.

The first attempt was taken by the East India Company as a result of which the Indian Botanic Garden, one of the most celebrated botanic gardens in the whole world was established.

In regards to the botanical studies in India the most remarkable person is Col. Robert Kyd (1746-1793). He was born in an old Forfarshire family. In 1764 he became member of the Cadet and Ensign Bengal Engineers. In 1782 he became lieutenant Colonel. As the Military Secretary to Government in 1786 he proposed Sir John Macpherson, the acting Governor General, to establish a Botanic Garden at Calcutta for the growth of teak timber for shipbuilding. The Governor General considered the scheme and in 1787 the Court of Directors approved it. The country house and garden of Col. Kyd were situated at Sibpur (Howrah). For the botanic garden he selected 300 acres contiguous to his property. Thus the Indian Botanic Garden was established in 1787 under the East India Company's patronage. The "Company Bagan" served as a platform for introducing and subsequently exporting horticultural and economically important plant species of this region such as tea, jute, cotton, chinkona, hemp, flax, rubber, vanilla, coffee, cardamom, pepper, nutmeg, indigo, sago etc. and plant products like spices, timber etc. to England. Kyd was employed as the Honorary Superintendent of the Garden until his death. He died on May 26, 1793 bequeathing the bulk of his property to Major (later Lt. General) Alexander Kyd. In 1795 commemorating him a marble urn was erected by Banks the Sculptor in the Botanic Garden, on a site selected by Dr. Roxburgh, his successor.

William Roxburgh was appointed as the first salaried superintendent of the Garden (1793-1814). The objectives of the Garden were reoriented to a larger extent towards plant taxonomy by Roxburgh. He introduced modern plant taxonomy (post Linnean) in India by establishing a large Herbarium (now known as Central National Herbarium). He wrote the **Hortus Bengalensis** and **Flora Indica**, the latter was not published complete until 1832. It was "an admirable production: the descriptions are accurate and graphic, and its authorship justly entitles Roxburgh to his title of the "Father of Indian Botany". He was an enthusiastic botanist and a good gardener. He first attempted to draw up a systematic account of the plants of India. He paid much attention also to economic botany. His monument, with a Latin inscription by Bishop Heber, is situated in the Botanic Garden.

In 1795 the high quality timber-yielding tree from West Indies was first introduced in the "Company Bagan". But unfortunately the Garden-area was reduced to 270 acres in 1820 and it was found impossible for teak growing. So the area was given up for the Bishop's College. This college was later transformed into the Bengal Engineering College.

In 1823 Robert Bruce discovered tea (*Camellia theifera*) from North East and Francis Jenkins started the tea cultivation only after its successful experiments in the Garden in 1834.

For the expansion of the Royal Botanic Garden Col. Kyd, W. Rauxberg, Francis Buchanan Hamilton, Nathaniel Wallich, W. Griffith, H. Falconer and Sir Joseph contributed much. This Garden is the pioneer of its character in India, and may be the second largest in Asia. The great Banyan tree of this Garden, the large and small palm houses, orchid house, fernery, cacti and succulents, branching palms, screw pine collection, bamboo collection, giant water lily of the Amazon are some of the outstanding showpieces of the Garden. Besides this, it has got a favorable collection of the herbarium specimens founded by W. Roxburgh.

In 1862 cinchona cultivation was initiated in Sikkim Himalayas and Darjeeling hills after experiments at the Royal Botanic Garden (Sibpur) by T. Anderson who brought its seeds from Royal Botanic Garden, Kew (England) in 1861.

However, an attempt to formulate a central Survey for the systematization of the activity towards the flora of this country was made in 1858 when the Crown of England took over the concern of East India Company in its hold. Since then the Company Bagan has been called as the Royal Botanic Garden. Afterward, to keep up the efficiency and standard of botanical studies in India it was considered to co-ordinate the works of different centres under an eminent botanist.

By the late nineteenth century the Governments of Bengal, Bombay, Madras and North Western Provinces commenced botanical studies through their botanical departments in the earlier established gardens at Sibpur, Poona, Madras and Saharanpur. Brigade Surgeon Lt. Colonel Sir George King who took the charge of Royal Botanic Garden (Sibpur) in 1871 was instrumental in getting a new herbarium building built in the said garden during 1882. Herbarium specimens were arranged according to the Bentham & Hookers' system of plant classification. Taxonomic revisions, accounts on flora, monographs on district floras, etc. were published during this period. All the books and about five lakh plant specimens were shifted to the new house in the succeeding year.

By this time the Government of India undertook programmes for exploration of frontier and Trans-frontier regions in North Western Punjab, Central Provinces, Central India, Rajputana, Assam, Burma and Andaman. As coordination of botanical works of the country through central organizations proved an aim, proposals and schemes for the organization of a Survey were put forth before the Government and in July 1887 the Secretary of State for India approved the said proposal. On 13 February 1890 the **Botanical Survey of India** was formed. Sir George King took the charge as its first ex-officio Director.

For the purposes of botanical survey the country was divided into four Botanical regions — the East, North, West and South, with centres at Calcutta (Sibpur), Saharanpur, Bombay (poona) and Madras respectively exactly corresponding to the centres where botanical activities had been evident in earlier years. The Survey's headquarter was set up in Calcutta. It coordinated the botanical works of regional centres and at the same time concentrated on botanical explorations.

Eminent naturalists and botanists joined the Survey in different periods. Prominent among them are Thomas Henry-Colebrooke, H. Falconer, William Griffith, Buchanan Hamilton, William Roxburgh, Nathaniel Wallich, David Prain, J.F. Duthie, R. Strachey, J.E. Winterbottom, W. Moorcroft, J.F. Royle and others who made useful contribution to the knowledge of country's flora. Some important documents and monographic works were published during the period, viz. **Flora of the Bombay Presidency** by T. Cooke (1901-8), **Flora of the Presidency of Madras** by J.S. Gamble (1915-36), **Bengal Plants** by D. Prain (1903), **Flora of the Upper Gangetic Plains** by J. F. Duthie (1903-29) and **The Botany of Bihar and Orissa** by H.H. Haines (1921-25) to associate with the monumental work of Sir J.D. Hooker's **Flora of British India** (1872-1897). Owing to shortage of fund and man power of its own, activities of the Survey gradually diminished. The Survey became almost non-functional after the retirement of C.C. Calder as Director. After that for a long period the Survey had Curator of the Industrial Section of Indian Museum (Kolkata) and a systematic Assistant in the herbarium attached to the Royal Botanic Garden, (Sibpur). Previously G. Watt had made a collection of herbarium that has been housed in the Indian Museum (Kolkata). At this time the herbarium of the Reporter of Economic Products was transferred to Botanical Survey of India.

The Industrial Section of the Indian Museum (Kolkata) has been a part of the Botanical Survey of India since January 1911.

In 1947 India became independent and in 1950, the Royal Botanic Garden was renamed as Indian Botanic Garden. The herbarium of the Indian Botanic Garden was taken over by Botanical Survey of India in 1957 and subsequently became the Central National Herbarium. On January 1, 1963 the Government of West Bengal handed over the authority of the Botanical Garden to the Central Government. In the year 1988 the Indian Botanic Garden celebrated its bicentenary.

After independence the importance of the Botanical Survey of India in assessing the entire plant resources of the country was considered. Dr. E. K. Janaki Ammal was appointed as 'Officer on Special Duty' on 14 October 1952 to layout for reconstructing Botanical Survey of India. The re-organization plan was finally proved by the Government of India on 29 March 1954 with Calcutta as headquarter of the Survey. On advice of the Special Officer four regional centres, namely Botanical Survey of India, Southern Circle, Coimbatore (10 October, 1955), Botanical Survey of India, Western Circle, Pune (17 December, 1955), Botanical Survey of India, Eastern Circle, Shillong (10 December, 1955) and Botanical Survey of India, Northern Circle, Dehra Dun (1 August 1956) were instituted with their main office in Calcutta (1955). A chief botanist was employed as its Head (re-designated as Director in 1963). Concurrently a "Central Botanical Laboratory" was started in Calcutta on April 13, 1954 to conduct research on various disciplines of Botany such as cytology plant physiology, plant chemistry, seed biology, ecology, etc. This was temporarily housed at Lucknow in December 1957 and afterwards established at Allahabad for the study of various aspects of plant biology. The scientific wing along with the herbarium that has been attached to Indian Botanic Garden was now transferred to Botanical

Survey of India in 1957 and named as **Central National Herbarium**. Its aim was to rejuvenate and to act as a national storehouse of natural heritage. During this period the herbarium of Forest Department of Assam was taken over and amalgamated with Shillong herbarium in 1956, followed by that of the herbarium of Cooke and Talbot and Madras herbarium to Coimbatore herbarium in 1957.

In 1959 the First Volume (vol. 1) of the Bulletin of the Botanical Survey of India was published.

In 1960 the Woodlands Building was occupied for Herbarium and Office at Eastern Circle, Shillong.

Under the new system five new regional circles were established at bio-geographically-fertile zones. This was done to enhance the Survey in light of devising a set record of floral stock of the country for future research in different field and necessary monitoring.

The **Central Circle** started at Allahabad in 31 July 1962, after removing of Central Botanical Laboratory again to Kolkata. It covers the botanical studies in the states of Madhya Pradesh, Chattisgarh and the remaining districts of Uttar Pradesh. This Circle has an Experimental Botanic Garden at Allahabad.

The **Arid Zone Circle** at Jodhpur was established in February 1972 covering the states of Rajasthan and Gujarat.

The **Andaman and Nicobar Circle** was established on 30 March 1972 at Port Blair including all the oceanic islands under Andaman & Nicobar. The Circle has an Experimental Botanic Garden at Dhanikhari.

The **Arunachal Field Station** at Itanagar started in July 1977. It covers the state of Arunachal Pradesh. The Station has an Arboretum at Sankie View, Itanagar.

The ninth regional centre as **Sikkim Himalayan Circle** was set up in December 1979 at Gangtok. It covers the states of Sikkim and Darjeeling district of West Bengal.

After changes, with the expansion as well as founding of different regional centres, the aims and objectives of the Botanical Survey of India were again outlined. **The Programme Implementation and Evaluation Committee** did it in 1976 to proceed taxonomic research and to quicken the scientific aptitude for the exhaustive education of flora of the country. A project was undertaken — ''Flora of India'', for ethno-botanical investigation, modification and upkeep of herbaria and museums, and generating appeal among botanists and public overall.

During the successive plan periods, the functions of Botanical Survey of India were further diversified to encompass different new areas such as assessment and cataloguing of endemic, rare and endangered plant species; evolving conservation strategies; studies on fragile ecosystems and protected areas like Sanctuaries, National Parks and Biosphere Reserves, monitoring on changes in floristic components; ex-situ conservation, multiplication and maintenance of germplasm of plant genetic resources, endemic and threatened species, wild ornamentals, etc.; enthnobotanical and geobotanical studies and the development of National Database on Herbarium (including type specimens), live collections, plant distribution and nomenclature.

In a new review in 1987 the aims and objectives of Botanical Survey remained unchanged but that the activities such as inspection and investigation of plant products, inventory of endangered species, publication on India's flora, preparing of national Data Bank on herbarium and live collection, plant distribution and nomenclature were undertaken. During 1987-88 Bicentenary of India Botanic Garden was celebrated.

In 1989 tissue Culture Laboratory at Barapani, Eastern Circle, Shillong was started. In the same year 'Scanning Electron Microscope' was installed in Central National Herbarium building. In 1990 Centenary year of the Botanical Survey of India was observed. After the approval of the Converntion on Biological Diversity by the Government of India in February 1994, a greater role for Botanical Survey of India was conceived.

The primary objectives of the Survey are (1) to inspect the plant resources of the country, (2) to commence and accomplish taxonomic studies of all the flora of the country, (3) to register the endangered species, (4) to accept standards for sufficient conservation and to collect and persevere germplasm and gene-bank of endangered, protected and unprotected species, (5) to bring out editions of National Flora and Flora of States/Union Territories, (6) to identify, collect and preserve plants specimens, which are economically and else useful to human being and (7) to devise National Database of herbarium collection including types, live collections, plant genetic resources, plant distribution and nomenclature.

The Survey has some secondary objectives such as (1) to accept studies on selected critical and weak ecosystems, (2) to undertake appraisal of flora relating to environment impact studies as and when necessary, (3) to undertake ethno-botanical investigation and assess plants of commercial use in determined areas and (4) to carry out geo-botanical studies in determined areas.

Recently the Survey has also extended its activities to Antarctica from 16th expedition (1996-97) onwards for the study of bryophytes, fungi and algae (except the blue-green).

Accomplishments :

1. Exploration of Plant Resources : seventy percent area fully explored of Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Delhi, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Lakshadweep, Madhya Pradesh, Maharashtra, Meghalaya, Pondicherry, Rajasthan, Tamil Nadu and West Bengal. Besides, forty to seventy percent areas are fully explored of Assam, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Orissa, Punjab, Sikkim, Tripura and Uttar Pradesh. Moreover, forty per cent areas are fully explored of Andhra Pradesh, Arunachal Pradesh, Bihar and Gujarat.
2. Floristic and taxonomic studies : the taxonomic studies so far conducted by the Survey for the preparation of National/State/District Floras, fragile ecosystems and revisionary studies on families/genera/tribes have resulted in the discovery of about 1500 taxa new to India and about 700 taxa new to science, including 26 new genera. As regards the non-flowering plants particularly the Cryptogams, Botanical Survey of India has made significant contributions towards the study of Bryophytes.
3. Registering of Endangered plant species : Based on the survey and exploration as wen as herbarium and literature studies, about 1500 species of flowering plants and few hundreds of Pteridophytes, Bryophytes, Lichens and Fungi have been identified as threatened. The Survey has compiled Data Sheets on 1182 species 708 of which already have been published as Red Data Book of Indian Plants, Volumes 1-5.

4. Ex-situ conservation : Botanical Survey of India is energetically performing in the ex-situ conservation through its chain of botanic gardens instituted in different regional circles. These units are working in collection, introduction, growth and maintenance of germplasm of orchids, bamboo, palms, medicinal plants, legumes, ferns, wild edible plants, insectivorous plants, gymnosperms and economically important plant species.
5. Delicate ecosystem : Floristic studies of more than twenty-five delicate ecosystems such as cold deserts of Trans Himalayas, Mothronwala freshwater swamps, Rann of Kutch, Agumbe, Nallamalais, Chilika Lake, Mahanadi delta, Mangrove ecosystems, Coastal ecosystems, etc. have also been done and many others are under exploration.
6. Protected areas : the Survey has ended floristic studies on five Biosphere Reserves namely Great Nicobar, Nilgiri, Gulf of Mannar, Manas and Nanda Devi and thirty-one National Parks. Studies on remaining seven Biosphere Reserves are in progression.
7. Ethnobotanical studies : Botanical Survey of India entered recording and documenting ethnobotanical data concerning all tribes pertaining to forty-one districts of the states of Bihar, Goa, Karnataka, Orissa and Rajasthan and over one hundred and fourteen tribes belonging to seventy-two districts of Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Jammu & Kashmir, Madhya Pradesh, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal for critical studies leading to sustainable utilization of bioresources, patenting of traditional knowledge system to prevent biopiracy and intellectual property rights.
8. Environmental impact assessment : the Botanical Survey of India has carried out studies on the flora of more than one hundred major project sites.
9. Geobotanical studies : the Survey has also carried out and finished the geobotanical and bio-geochemical investigation in Singhbhum Copper Belt, Bihar and Khetri Copper Belt in Rajasthan in partnership with Geological Survey of India.
10. National database: at the Computer units of Northern Circle, Dehra Dun and Southern Circle, Coimbatore storage of data on Indian flora, herbarium holdings and taxonomic bibliography is being executed.
11. Environmental education and awareness: Botanical Survey of India with its sections and regional circles through their museum exhibits helps in creating general appreciation amongst students and general people about the role of plants in promoting the condition of human life and sustenance of hygienic atmosphere.

The Botanical Survey of India with its botanical gardens, parks and other meadows designs a capable system for conservation of plants of usefulness and appreciative importance. Besides, this has a purpose to safekeeping ecological balance and to avert environmental degradation and to sustain a pollution-free clean natural atmosphere. It is now shaped as an essential component of the cultural matrix of our country.

IMPORTANCE OF RESEARCH ON WOMAN IN INDIAN MUSEUMS

Indrani Bhattacharya (Chanda)

The *Sovereign, Secular, Democratic, Republic* of India is the largest democracy in the world. About half of our a little above one billion population are the women. Ideally, in every sphere of life, including museums, women should have equal participation, but the reality is far from the ideal. Women in government at ministerial level are 10.1% in 2000, of which 8.8% in the lower house and 9.1% in the upper house. Similarly in museums, we seldom find women participation in the policy making and decision taking positions. Though, ironically enough, girls constitute majority of the students in the university museology departments, not only in India, but also throughout the world. Why is it not then being reflected through our museums' employee ratio? We do find women in museums in limited numbers restricted to the lower ranks. Why is such gender bias? Has anyone given serious thought about such inequality? Isn't it a subject for research to be undertaken by the museums?

India's independence brought about radical changes in the field of education and research. Many policies are chalked; several educational institutions and institutes of higher research have been established allover the country. A nationwide network of continuing research has been established between existing infrastructures, new institutions, and open & distant learning centres. Still mass illiteracy is the greatest blemish. Among the illiterates, women constitute the largest percentage.

Research is for change. Research has long been the most decisive of our life chances. It is a key to equal opportunity and ladder to advancement.

Museums are the mirrors of our civilization. They are the custodians of our natural and cultural heritage. Museums in a democracy give everybody a chance for personal enrichment, professional advancement and effective participation in social and cultural life. The main aim of today's museum research is —

1. Development of education and productivity.
2. Development of social and national unity.
3. Education modernisation and public awareness.
4. Promotion of national consciousness. And
5. Emphasizing social, moral and spiritual values.

When we go to look for basic data regarding the number of women visitors in our museums, the likes & dislikes, expectations, aspirations & desires of the women museum visitors,

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exhibitions relating to women issues, role of women in museum management, the contributions of women in the collections that are possessed by our museums, etc., we find a complete vacuum in the database. No explanatory museum research has been taken up, even by the big museums on such important issues.

The basic problem is that the museum planners and administrators do not accord women issues the same importance as they do to the men. Such apathy perhaps arises from the visualisation of the role of women in family and society. The report of the committee on *Status of Women in India* in 1974, pointed out to the failure of constitutional and legal guarantees in changing the lives of the vast masses of our womenfolk simply because they did not have access to even knowledge about the status and rights. The situation is not much different even after the passage of over a quarter of a century. Museums as educational institutions can come forward to eradicate such social discrimination and gender bias. Museums should immediately start serious research work to fulfil the need of our women, their emotions and aspirations, etc. Museum research on women should be counteracting cultural and social barriers and should add to the skill and experience. As a very first step the museums must ascertain the actual percentage of their women visitors in relation to their male counterpart. Then they must find out the women's choices regarding content, format & style of the exhibitions — even to the basics like colour schemes of exhibits, galleries, etc., exhibit orientation, various programmes including the educational ones and the extension services. The inputs should help to prepare a complete database on the women museum visitors that would enable the museums to amend themselves.

Women are the major contributors to our museum collections. Traditionally rural women have been involved in the production and distribution of goods and services. Many of the art and craft collections in the museums are solely produced by the womenfolk. Even today, women artisans play pivotal role in producing handicraft items. Women have considerable roles in the production of the artefacts made by their men folk. Say, for example, the clay and terracotta idols, though produced mainly by the male artisans, still women participate in decorating, arranging and packaging them. Examples are plenty. In different parts of India, we find handicraft items, beautiful textiles made by the women. The women contributions must be duly recognised.

Women are in fact repositories of numbers of our traditional cultural heritage. In rural Indian set up, also in the urban milieu, women are the primary source of moral and value education for the children. When you think of your own grandmothers or great grandmothers, you may find that probably, they were not formally educated, still they used to uphold high standard of morality, ethics, social values and collective wisdom. The so-called *granny's kitchen remedies* are extremely useful even in today's world of medical excellences. The traditional wisdom borne by the women must be properly and scientifically documented immediately to save them from extinction. Museums are the most perfect agencies for taking up such researches. Hoards of elements of cultural heritage, especially the oral traditions like ballads, folk songs, riddles, rituals, decorations, folk games, even recipes, etc., are still being carried by the women. Museums, as custodians of culture, must arrange to take up serious research works to document, preserve and revive such a rich repository of our cultural heritage.

In our daily life, women are considered the most eligible housekeepers. Maintenance of museum collections are also a kind of housekeeping, may be a little more sophisticated. Then why should not women be considered as the most eligible museum curators, while so many young, energetic and enthusiastic women museologists are being passed out every year from our museology training schools? How long we shall have to wait for our own Grace Morley?

In conclusion, I may forward few suggestions that may be considered to increase women participation and interest in museums —

1. Immediate research should be taken up by all leading museums of the country to ascertain the exact numbers of women visitors, their choices, dislikes, aspirations, etc: (close cooperation between the museums and university museology departments may ensure effective research on the above subjects).
2. Efforts must be taken to know why women do not visit museums more in numbers.
3. Museums must give more chance to the women museologists in museum services. especially in the policy making capacities.
4. Adequate involvement of women at the advisory bodies of the museums.
5. Involving women in resource development, particularly in preparation of exhibitions and giving them operational responsibilities of the programmes arranged by the museums.
6. Museum should take leading roles in increasing awareness regarding women's status in society and in asserting their voice more prominently and effectively in all decision-makings.

Equality is a right and museums must accord equality of rights to the women.

This article has been based on the paper presented by the author in the All India Museums Conference, on the theme *Museum & Research*, held in shillong, in June 2003.

MUSEUMS IN COMMUNITY SERVICE

Supreo Chanda

(This was written in 1988 and won the Centenary Exhibition Gold Medal 1986, awarded by the Calcutta University for the best essay in Museology. Some of the facts and figures might have changed by now.)

Initially, the museums were involved in collection, conservation and display of the antiquities of Art and Archaeology. Sometimes those served educationally only to the scholars. But during the last few decades this concept has changed drastically. Since the end of the Second World War a vigorous cultural tourism has sprung up that brings to museums an international public that is eager to know other people, other cultures, and other ways of life. Besides the contribution made by museums to the economy of their countries through their importance for touristic activities, they are also involved in the development of other national resources and industries through their scientific research. They co-operate actively in projects of applied science, orienting their investigation towards the needs of their country's exploitation industries, such as fisheries, petrol, mining, and others.

Today, there is a realisation amongst museum personnel that the life and success of the museum depends evermore directly on its service to people and community.

Community - Definition, Types & Changes

Lexically, community can be defined as "a body of persons sharing the same political, municipal, social, religious or territorial conditions." According to the social science literature, community is designated as "a geographical area with definite legal boundaries occupied by residents engaged in interrelated economic activities and constituting a politically self-governing unit" (Seligman, 1954).

There are many debates among the sociologists regarding the definitions of community, some define in terms of socio-culture, some in biological terms while others give stress on geographical boundaries: Community, defined in whatever terms it might be, started with the domestication of plants in S.W. Asia approximately in 10,000 BC. As soon as food-producing revolution effectively replaced earlier hunting and gathering pattern, village life became established. The *Village Threshold*, started at Jarmo in north-eastern Iraq in 6750 BC, was crossed about 5000 BC in lower Egypt, in Atlantic Europe about 4000 BC, in India about 2500 BC, in West Africa about 1500 BC, and in Mesoamerica about 3000 BC while the dates for China remain undetermined but surely prior to the second millennium BC.

Village usually refers to a consolidated agricultural community. In this usage, it is

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distinguished from such other types of settlement pattern as tribal camps, dispersed hamlets, suburbs, and towns, although in practice, the line of demarcation cannot always be drawn with unequivocal sharpness. So defined, the village was the predominant type of human community for over three millennia and continues to be so in most of Asia, Africa, and Latin America, as well as in some parts of Europe (David L Sills, 1968).

The domestication techniques spread rapidly to the other parts of the globe. Man's first attempt to shape his environments actively, marked new era of cultural development. The fullest achievements of this new era came only with *Urban revolution* or the appearance of civilisation. Economic relationships altered resulting the emergence of towns and cities. Social and religious development associated with urban centres brought village life to its full development. ''Paradoxically, it was the appearance of the political economic... the primary farming community did not long remain independent and autonomous but became an integral part of one or another civilisational complex, Mayan or Peruvian, Mesopotamian or Egyptian, Indic or Sinitic. Between the folk culture of the village and the sophisticated culture of urban or quasi-urban settlements, there developed a multifaceted interdependence that bound them, for all their contrasts, into a single socio-cultural whole.''

During the last half of the 19th century some specific social trends came into being. Agriculture improved, corporate sectors emerged leading to dissemination of technologies to different countries, production of commodities were no longer bound to the needs of a specific locality, widespread introduction of non-human energy in the form of improvised machines made the craftsmanship of the workers more and more less essential – resulting a *social surplus.* Improved transportation and communication means – railways, motorcars, highways, telephone, telegraph, radio – made the labourers more mobile, made the local community more flexible and less self-contained. A new type of local community emerged due to those interrelated economic, technological and social changes.

"... the dynamics of society were seen to reside not in its structure but rather in the interests, wishes, desires and purposes of individual human beings interacting with other human beings in varieties of social groupings. The local community therefore came to be viewed as one of the types of social grouping in which human nature and its impulsions were expressed, while the origin of these impulsions and the principal conditioning factors in their expression were thought to be psychological" (R.A. Seligman, 1954).

Emergence of the museum as a social institution – origin of Public Museums

"The conviction that the enjoyment of cultural good is the right of each member of a society and not only of an elite, moved the owners of great collections, in past centuries, to open them to the broad public until finally they became the property of public institutions and governments" (Grete Mostny, 1972).

In their current meaning, Public Museums are institutions of relatively recent origin, the earliest ones having been founded in the last quarters of the eighteenth century, in both the Old and the New World. The collections that preceded them were connected with places of worship, belonged to groups of people who shared a common interest or, in their majority, to private individuals.

''Between the later eighteenth and the early nineteenth century a new public institution came into being – The Museum – which both reflected and fostered changing ways of life," writes Alma S. Witttlin, in her book 'Museums: In Search of a Usable Future', 1970, "The ongoing process of large scale industrial production of goods, required an upgrading of the scholastic skills and general education of workers to substitute for those of small farmers and craftsmen whose competence had not necessarily required literacy and whose awareness was limited to their immediate environment. New expectations were awakened in the urban earners whose embitterment over new kinds of deprivations sharpened by their exposure to a greater variety of available goods and to a mixed crowd of people."

Collections preceding public museums, as per their purpose served or functions, may be divided into six major categories, these are –

1. Economic Hoard Collections.
2. Social Prestige Collections.
3. Magic Collections – Collections of things believed to have some magical or occult powers.
4. Collections as Expression of Group Loyalty.
5. Collections as Means of Stimulating Curiosity and Inquiry.
6. Collections as Means of Emotional Experience.

But these private collections were kept carefully out-of-reach of the general public – only few privileged people could have gained access to those according to the will of the collector. In the later seventeenth century, the numbers of visitors to these private collections in Europe have risen and the selectivity regarding the admission began to be waived off. Before that, Julius Caesar condemned private hoarding and as an example, he himself donated all his collections to the temples. After his death again those objects seized by the private collectors.

The most astonishing fact is that despite the lack of formal education, the great masses of eighteenth century England, in great numbers, wanted to be admitted to the collections, even they were prepared to pay admission fee.

The French revolution of 1798 made the great Louvre Museum in Paris, the first public museum at France.

In 1781, the public was given access to the hoard of imperial collectors in Vienna, Austria. In 1806, the people of Russia got the privilege to be admitted to the Royal collection at Kremlin. The Prado, in Madrid, Spain also evolved from former royal collections in the year 1819. In Florence, Italy, the splendid private collection of the Medici was opened to the public in 1739 as the Uffizi Gallery.

Unlike most of the early European museums, the public museums of Germany, Netherlands, Great Britain and United States did not grow out of private collections.

The public museums of Berlin were from the beginning based on a plan. The Old Museum of Berlin was opened in 1830.

The British Museum in London, the first public museum in England, was founded by an act of Parliament, in 1753 and was opened to public in 1759. The general public was admitted on four days of the week, from Monday through Thursday, and on Fridays select companies. On certain days the museum was reserved for students of the Royal Academy.

In 1773, the first public museum of America was founded in Charleston, South Carolina.

But much before that, when the first collections were established in America, the European differences between *Private* and *Public* lost much of its definitiveness. Common people were given the opportunity to share the knowledge and entertainment from the collections owned by private individuals, which were definitely quite different from the other countries in Europe. "The transformation of private collections into public museums", again Alma S. Witlin to be quoted, "... and the establishment of new museums, were symptoms of the acceptance by society of expanding human rights. Spokesmen arose among those holding power and among the unprivileged; ideas were articulated which represented what is known as the *Spirit of Enlightenment*. The process of its development was very gradual with numerous brakes applied to it, but it was palpable, and it quickened with the passing of years."

In India, modern museums are largely imposed from the above. Museums in India are mainly Government Institutions formed by the Govt. or organised by learned bodies with bureaucratic financial help from the above.

Establishment of museums in India was initiated under the direct influences of the British colonialists. In 1784, the Asiatic Society of Bengal founded at Calcutta. In 1814, the Society founded the Indian Museum, Calcutta, under the supervision of the Danish botanist Dr. Nathaniel Wallich, who offered his voluntary service to the museum as honorary Curator. The first College Museum in India was organised by the pioneer missionary William Carey at Serampore, West Bengal in 1818. In 1828, museum of Economic Geology at Madras was established. In 1857, the Madras Central Museum opened under the charge of the English Assistant Surgeon Edward Green Balfour. The Madras Literary Society established both the museums.

The pioneering instances of the two Societies initiated the establishing of many more museums in the then undivided India. By 1857, there were as many as 12 museums in India. Besides the initiative of European individuals, backed by official agencies, great impetus of the emergence of museums in the 50's was also due to the *Great Exhibition* of 1851 in London. The enthusiasm slightly slowed down due to *Sepoy mutiny* in 1857. In 1862, the Archaeological Survey of India was formed.

Princely states of India also started establishing museums at the instances of the Europeans. Several museums were set up in these states. The Maharaja of Travancore established the Trivandrum Museum in 1857; Mysore founded one at Bangalore in 1866; in 1875, the Chief of Nandgaon, Mahant Ghasidas initiated the Raipur Museum at Madhya Pradesh. In 1863, two museums at Lucknow and Nagpur were opened. During the celebration of the Jubilee of Queen Victoria in 1887, several museums were founded at Jaipur, Udaipur, Rajkot, Vijayawada, etc. In 1874, the Mathura Museum (Now Govt. Museum, Mathura) was founded by F.S. Growse. Faizabad Museum in 1867, Delhi Municipal Museum in 1868 and Calcutta Economic Museum in 1868, were also outcomes of this period. At the end of the 19th century few more new museums have also appeared. But the museums of upto this period were either means of passing leisure time or essentially research museums, the concept of public service or educational activities was yet to come up.

The next period of museum movement can be termed as period of official initiative. Lord Curzon, the then Viceroy of India, revived the Archaeological Survey of India that led to the opening of site museums at important archaeological sites. Not less than thirty archaeological museums were created. The major site museums founded in this period were at Sarnath (1904), Agra (1906), Ajmer (1908), Delhi Fort (1909), Bijapur (1912), Nalanda (1917) and Sanchi (1919) apart from several others, some of which are now in Pakistan.

A new tendency of organising museums in learned societies began – Museums of the Bangiya Sahitya Parishad, Calcutta (1910), Bharatiya ltihasa Samshodhak Mandal, Pune (1910), and Andhra Historical Research Society, Rajamundry (1928) were among these.

In 1905, the Bombay inhabitants decided to build a public museum to commemorate the visit of the Prince & Princess of Wales. The Bombay Government gave the site. Sir Currimbhoy Ibrahim donated 3 lakhs of rupees; Sir Cowasji Jehangir donated Rs. 50,000 and the Bombay Municipality constituted a fund of rupees 3 lakhs for the running expenses. In 1912, the museum named the 'Prince of Wales Museum' was thrown open to the public. The Victoria Memorial Hall, Calcutta, a remarkable among early memorial museums in India, was opened to the public, in an incomplete state, in 1921.

The period followed, was a period of great political turmoil in India – Struggle for Freedom intensified, Civil Disobedience, Independence Day celebration on 26 January 1930, Quit India of 1942, Global Economic Depression and the Second World War in 1939. Even then, the period produced about 36 museums between 1928 and 1947. Princely States patronised the establishment of 17 museums. More museums in the learned societies came up – Rajwade Samshodhan Mandal (1932), Kamarupa Anusandhan Samiti, Gauhati, Collections of two professors of the Ravenshaw College, Cuttack were among the notables. The latter two afterwards turned into Provincial Museums of Assam and Orissa respectively. Some other Govt. agencies and corporate bodies took interests this time. Allahabad Municipal Museum founded in 1931. First University Museum of Archaeology – Asutosh Museum of Fine (now Indian) Art established in 1937 by the University of Calcutta.

Temple museums began to come up by this time in the South under the patronage of the Devasthanam Committee. One of these, the museum at Srirangam, Tiruchirapally, established in 1935.

Archaeological Survey organised the Central Asian Antiquities Museum in 1929 in New Delhi out of the collections of Sir Aurelstain from his expeditions of Chinese Turkistan (this museum later on merged with the National Museum, New Delhi).

"During this period the museum movement for the first time, mirrored certain aspects of national life and the people's aspirations", says Sarkar (1981).

In 1947, along with the division of India, archaeological and cultural division had also occurred. Important archaeological sites of Indus and Peshawar region had gone to Pakistan. During this period several new museums began to coming up. The National Museum, New Delhi, formed in 1948, and opened to public on 15 August 1949, in the Rashtrapati Bhavan, and transferred to present location in December 1960. The Birla Industrial and Technological Museum, Calcutta, was established in May 1959. The Salar Jung Museum, Hyderabad was taken over by the Govt. of India in 1958, and later declared as a National Museum in 1961. The Indian Museum, Calcutta, also got the same status. Other important museums are – National Museum of Natural History, National Modern Art Gallery, Rail Transport Museum, National Children's Museum, Doll's Museum, all in New Delhi. Different personalia museums have come up during this period, viz., Nehru Memorial Museum, New Delhi, Rabindra Bharati Museum, Calcutta, a chain of Gandhi Smarak Sangrahalayas at different places. Two more Science & Technology

Museums, Visvesvaraya Science and Technological Museum, Bangalore and Nehru Science Centre, Bombay have also come up. Scores of new museums are also under construction.

Several site museums and temple museums were set up by the Archaeological Survey of India, as for example – site museums at Amaravati, Bodhgaya and Kondapur; museums near temple-sites or within palaces, churches or forts, e.g., Hampi, Velha Goa, Fort St. George in Madras, Halebid, and Srirangapatna.

"The greatest change that has been ushered in during this period..." according to Sarkar, 1981, ".... is the change in outlook, the growing realisation that the physical growth of museums is not an end in itself; the qualitative aspects that aspire to democratise these institutions are now receiving greater emphasis. Every effort is being made to reorganise the museums on modern lines with improved methods of display aimed apparently at educating the public. The conception of the public museum – museums as a means of general education – is now fast gaining ground."

Development of Local Museums – in India and abroad

Local museums effective as a result of local enthusiasm are few and far between in India. A true local museum represents all the aspects of a region – historical, artistic, natural objects and eminent persons of the locality. This type of museum is absent in India.

Dr. Edward Green Balfour, the then Officer-in-Charge of the Madras Govt. Museum and National Art Gallery encouraged the starting of local museums at Bangalore, Bellary, Coimbatore, Cuddalore, Ootcamund, Secunderabad, Mangalore, Tiruchirapalli, etc. In 1855, there were in all six local museums attached to the Madras Museum in the Provinces of Madras at Bellary, Coimbatore, Cuddalore, Mangalore, Ootcamund and Rajahmundry. These local Museums in the districts started with such high hopes, received little support or attention and five were closed down by 1861 and in 1875 even the last one disappeared.

Few local museums were set up with the encouragement from the princely states during 1857 and 1898. The Archaeological Survey of India, as discussed before, also set up few site museums.

Girdharbhai Children's Museum, Amreli at Gujarat is an example of working local museum. Another one is the Vaishali Sangha – a voluntary organisation of Muzaffarpur area of Bihar, collected and explored antiquities from the site of Basadh (former Vaishali), eventually the collection was handed over to the ASI and left to the establishment of a site museum.

In West Bengal, few local museums have been founded during the last few decades. Among them two are worth mentioning. The first one is the Acharya Jogesh Chandra Purakriti Bhavan, the museum section of the Bangiya Sahitya Parishad, Bishnupur, developed in 1951 by active patronage of Jogeshchandra Roy Vidyanidhi, who enthused local youths and scholars like Satyakinkar Sahana Vidyavinod, Dr. Kalipada Bandyopadhyay, Prof. Ram saran Ghosh, Hemendranath Palit, Gangagovinda Roy, etc. of Bishnupur and Bankura to collect artistic and historical objects from different parts of Bankura district. The second example is the Tamralipta Museum & Research Centre, Tamluk was founded by the scholars and enthusiastic young people interested in the archaeology of the region. Some specimens of folk art and craft are also presently housed in the museum.

Apart from India, some other Asian countries have turned towards the development of local museums. In Japan, the development of museums in the provincial cities, usually concerned not only with the local archaeology, arts and ethnography, but also with the neighbouring natural environment, represent an effort towards decentralisation. They normally attract visits from the schools of the surrounding rural areas.

Singapore also fosters a highly diversified programme of adult education for the suburban population along with the urban ones.

Indonesia, with its many islands, developing widely distributed provincial centres, with the aim not only of preserving the local material, whether from archaeological sources or simply indigenous traditional arts and crafts and ethnographic specimens of costumes and artefacts, but to carry on exhibitions and programmes for neighbouring rural areas as well as for the town.

Similar efforts towards decentralisation and service to smaller centres, including their rural population, are to be noted at Malaysia, Nepal & Thailand.

Among the countries of continental Europe, Germany, USSR, Poland and Czechoslovakia have shown specific interests towards decentralisation.

The small museums run by different historical societies in the USA have a peculiar local colour. Between 1960 and 1963, in America, a new museum was founded every 3.3 day, majority of them were essentially local in character.

Advantage of local museums for direct involvement in community life

Communities vary in degrees of complexity and have different problems – cultural, economic, social, or political. A local community does not have the same problems as all other communities in the world.

The community service in museums could naturally grow in institutions established as a result of a locally developed and in a healthy social area.

Local museums can understand something about the motivation, the aspirations, the needs and the traditions suitable to the social climate of that particular community.

Few examples of local museum activities in India and abroad may be cited here :

Shri Girdharbhai Children's Museum at Amreli, a district town situated in the heart of peninsular Saurashtra (Gujarat) is surrounded by villages. This museum imparts some special programmes for the local inhabitants, besides the museum's regular activities such as :

1. The museum has used local *Mahila Mandal* (women's circle) to elicit the participation of village women, shy and withdrawn, in museum's activities and arranged educational & cultural programmes in the museum.
2. Museum's periodical exhibitions are always related to rural traditions that seem to govern all community activities. The theme, for the temporary exhibitions and manner of presentation, complies with community needs and desires, faith and belief. Some of the themes have been –
   a) *Janmasthami* : a traditionally important festival marking the birth of Lord Krishna.
   b) Agricultural products of the region.
   c) Art and crafts work of the neighbourhood school children.
   d) Health : a focus on problems of the region.
   e) Local *hir* and bead works.

During Indo-Pak War in 1965 it had arranged timely exhibition on war and defence that was well received by the local inhabitants.

3. The museum organises a dress competition based on study of dolls in the museum but the *ras* and *garba* competition attracts a large number of people to the museum (*Garba* is the community dance of the region).
4. Besides these, the museum organises regular lectures for general public, with demonstrations, whenever possible, on topics such as, 'Our common birds', 'Sanitation', 'Communication', 'Our roads and bridges', 'Friends and foes of the agriculture', 'Diet and nutrition', etc.
5. The Museum also organises field study of birds, plants and historical monuments of the region.

Second example is the Anacostia Neighbourhood Museum, (Anacostia is a small community in Washington DC, USA) the world's first Intermediary museum, established in 1967, as an extension of the Smithsonian Institution. The Anacostia Neighbourhood Museum began in an abandoned movie theatre located about a mile and a half from the Smithsonian. A complete account of its activities can be found in its Director, John Kinard's (1972) report :

"Although small in area, Anacostia was selected because it represented all of the urban ills prevalent in modem cities of America. An advisory council made up of all segments of the Anacostia community – civic and youth groups, tenant councils, schools, the police, the clergy, and others – was formed.

The neighbourhood museum concerns itself with an analysis of the community and its history. It poses such questions as where did we come form, who are our heroes, what is our heritage, who are we as a people, what have we done to better ourselves and the community in which we live? What are our social, economic, political, and educational assets and liabilities?

The focus is on the problems, aspirations, hopes, fears, difficulties and dreams of its constituents. As the museum increases its understanding and awareness of its function, and purpose, the community also begins to discover its identity through the museum and to take pride in that identity. Their sense of community broadens.

The museum is independent in its operation. It determines its own priorities in regard to personnel policies, exhibits, educational programmes, and all other activities. As a free agent, it invites its neighbour to serve on an advisory committee."

Another good example worth mentioning is the Beamish Open-Air Museum (EST. 1970). In 1986, this museum won the 'British Museum of the Year' award. The museum aims to portray the social and industrial history of the region. All the different elements of the region – the industrial, urban and rural ways of life that co-existed in the North-East England have been recreated and linked together at Beamish. With this aim the museum preserved or recreated the objects of recent past (ranging between 1900-1925) in an open area (200 acres) – shifted rows of middle class houses, Dentist's chamber, Solicitor's office, pub, abandoned railway station; recreated, a co-operative store, row of pit cottages from the colliery area, home farm of that time, etc. Trams that are now obsolete run through the museum, full-scale replica of an old loco-engine is also kept in running condition. All the objects (recreations) are complete with each and every detail, even with people dressed as those days man the shops, cottages, etc.

Throughout the world, need for local museums are now being felt and as a result several new local museums are being set up.

Possible Avenues of Community Service that form an educational aid and guidance to the understanding of the topic which affect the community life of an area – broadening of the frontiers of knowledge for adults

The humanity is made up of heterogeneous societies of different cultural and technological development, each subject to constant social changes. Museums are supposed to serve these societies by creating adequate techniques and integrating their activities with those of other institutions that, in their field of action, are also designed to be of service to local, regional, and world communities. This social diversity obliges the museum to find approaches and solutions adapted to each one, which implies the creation of manifold and flexible museologies in order to be able to adjust to the continuous changes that affect and are brought about by mankind. This means that museums must maintain a constant vigilance in order to be up-to-date and that they must do their utmost to anticipate social and cultural orientation and events, expressing, by means of their exhibitions and research activities, the most important problems that affect their communities. Exhibitions – permanent, temporary and circulating should be complemented by guided visits, lectures, films and tape recordings. To develop a dialogue, the museum designer along with scientist and educator must create a special museographic language, which should be new and easily understood. Each museum has to execute these exhibitions in the measure it is able to, always trying to reach wider circles of community and present the chosen theme in such a way that faithfully reflects reality, even if it comprises only a small fraction of a large unit. The approach that, is chosen depends on the intention of the scientist and the educator, who have to take into account the educational needs and interests of their community.

Museums are often in much dilemma – the most frequent participant is the individual with advanced level of education, while the individual with less-education, who needs it the most, is less likely to become involved.

The first step in overcoming this dilemma should be an effective public relations function in the museum that involves an assessment of community needs and orientation, the creation of a favourable and consistent public image, a concern and involvement with the community and ultimately, the satisfaction of the clientele. This should be achieved with a consistent campaign aimed at high visibility through signs, releases for industrial and institutional house organs, membership campaigns, and the seemingly endless variety of other media sources available.

A better method to widen the adults' knowledge may be as follows (suggested by Richard L. Bunning, 1974) :

"A better approach would be for a historical museum to aim to give the visitor not only a historical perspective, but also a renewed pride in his rich heritage and an increased social consciousness. A museum of science and technology, of course, has the opportunity not only to display mankind's progress, but also to show how these advancements relate to the enrichment and increased quality of life. Similarly, museums of natural history, archaeology, anthropology, geology, etc. have the responsibility not only to exhibiting the field's findings, but also of showing the visitor how these findings are pertinent to him, the individual."

The museum that increases community involvement will gain increased community support. It can move toward becoming a focal point in providing education opportunities for its constituency – on a life-long basis.

For development of a programme dedicated to community education, museums need to work through following phases, as suggested by Sud (1966), in order to avoid confusion and wastage of funds :

1. Study of the community, its problem and needs.
2. Evolving of a plan to meet the needs.
3. Consideration of the available resources in men, material and finances to be considered.
4. Establishing patterns of collaboration with Community Development Programme, adult education organisations and other such institution in the community; and
5. Understanding a serious implementation of the programme.

"The form in which museums offer education is totally different to the teaching given in schools; there is only a coincidence of purpose and it is important to work towards, a complementation and not a duplications of efforts, The factor of coercion that still exists in the traditional school curriculum must be completely absent from the museum, Here the spontaneous interest of children and adults should be stimulated so that they work in entire liberty in the field of their personal interests" (Grete Mostny, 1972).

The museum & the rural, backward or underdeveloped interiors—the scope of museum community service in tribal areas

India, geographically and culturally a subcontinent, has a population of about 700 million, 82% of which lives in her more than 6,30,000 villages. India's population is now increasing at the rate of 12 million a year. The percentage of population below the poverty line has increased to around 50% and literacy percentage is just about 35. Naturally the no. of poorer and illiterates are higher in the underdeveloped rural and tribal belts.

Most of the existing museums in the country today do not have the requisite infrastructures and programmes to meet the demands of rural communities. Museums have neither received the recognition of planning bodies, nor they have been able to embrace the applied functions to workout the programmes for the contribution towards our development efforts. Only the exceptions are the science museums, now under the NCSM[1].

In 1953, the CSIR[2] has started a scheme to set up *Vigyan Mandirs* to prepare farmers for an agricultural revolution for which they had to be taught. Primarily a mixture of Science Museum and Information Centre, the *Vigyan Mandirs*, twenty-eight in number, had visuals, audio-visuals (each had movie projector), training facilities and utility services, e.g., soil testing – all useful tools for implementing a planner's idea. Vigyan Mandirs were supported by the Union Ministry for Scientific Research, and manned by a group of enthusiastic and idealistic youngmen, located in ideal agro-based areas and they were socially accepted by a native community. Nothing looked brighter than it did at the formative stage. By 1955, there were as many as 50 *Vigyan Mandirs*.

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[1] National Council of Science Museums.

[2] Council for Scientific & Industrial Research.

Within a decade, the entire chain of *Vigyan Mandirs* was in shambles. Visuals, once prepared, were never renovated; the projector had no spares; training programmes could not be organised for lack of staff; soil-testing services were stopped for want of chemicals; depleting source of fund brought all activities to a standstill and ultimately this project had to be defunct. Perhaps the failure was due to lack of trained personnel and planning in its organisation.

With the lessons derived from the failure of *Vigyan Mandirs*, the Birla Industrial and Technological Museum, closely followed by its sister museum at Bangalore, started extensive rural programmes in 1965. The BITM & VITM then started running a fleet of five large mobile science exhibition buses through the length and breadth of the country. Those units consisted of thematic exhibitions on various topics like as, 'The planet we live in', 'Water – the fountain of life', 'Popular Science', 'Man Must Measure', 'Transformation of energy', 'Light and sight', 'Our familiar electricity', 'Fun with Mathematics', 'Impact of Technology on Society', etc., which educate the rural masses of their living conditions, the science involved in their daily life, conditions which could be modified for betterment, type of modification and alteration which are of immediate need, the relevance of these changes and the impact of sciences introduced. The work had got wide publicity and acceptance. Their mobile unit was adopted by two non-science museums of the Country. But roughly about 10 years later, it was realised that these mobile units were unable to penetrate the interior of the country. "Reasons there were many..." as Saroj Ghose (1979), one of the responsible men behind this pioneering effort, says, "The mobile unit with working exhibits mounted on a bus attracted large crowds everywhere because of its novelty but had no lasting impression. Because of its generalised objective, it created some sort of background, but achieved little in particular. The short duration of exhibition and fairly large interval between two exhibitions in a particular site reduced the effectiveness of a mobile unit to a good publicity material, ... with exhibits requiring frequent changes, engine growing weary, roads getting bumpier, city-bred staff unwilling to spend their life on wheels in village – we looked like a rat in a maze".

Then the attention was given to the District Science Centres, where sustained activities round the year were present, programmes were organised with well-defined objectives and given support from the central museum. In 1978, the Birla Museum entered into collaboration with the Nehru Youth Centre in West Bengal. This organisation had a youth co-ordinator in the district town where District Science Centre is located and several workers working in different blocks. They had the grass root organisation extending to the deep interior of the district. The joint programme & activities proliferated in an unprecedented manner and participation by the people from remote villages became common. Now their joint activities include :

1. Permanent Exhibition, 2. Science Demonstration Lectures and Loan Service for the Schools, 3. Hobby Centres, 4. Science Fairs, 5. Film Shows, 6. Teacher Training Programme on the fabrication of teaching aids with cheapest rural resources, 7. Mobile Science Exhibitions, 8. Awareness Programmes in the form of workshops on agro-implements and machinery, soil testing, nutrition programme, preservation and storage of food and food grains, composting, *gobber* (cowdung) gas generation, recycling and use of wastewater, transportation, etc., 9. Science Forums, 10. Collection and Resource Assimilation that includes the collection of artefacts of traditional and indigenous science and technology, study of rural and tribal communities, funding organisations, committees, and individuals who could be collaborators

and service delivery agencies, 11. Temporary Exhibition on the topics like, agricultural implements, agricultural production, agricultural inputs, irrigation and water supply, land utilisation, energy and labour force, health and family welfare, hygiene and sanitation, etc., 12. Fabrication, 13. Publication.

Though this programme showed a path, it itself is still far off from the reaching to the most interiors, being restricted mainly to the easily accessible periphery of the centre.

"To meet the needs of vast population of India, establishment of a network of rural museums at block levels under the charge of the block development agencies is required...." opines P.D. Sud, (1979), "Such a network of rural museums under trained curator will be the real answer. These museums would be required to document and illustrate the process of transformation and development, be it cultural, scientific, industrial, economic, biological or social. These rural museums apart from their immediate benefits will also visually document the events for the reference of the coming generations. ... The local history, culture, art, handicrafts, rural and cottage industries, agriculture, health-hygiene, civics, malnutrition, child care, social and family welfare, Panchayati Raj Institution, co-operatives, important local fauna, flora, mineral wealth, and social forestry, use of electricity, etc., should be adequately portrayed in such museums."

The most neglected part of the Indian museums, community service excepting few noble examples is the tribal community. This neglect may be due to the inconvenient communications but more likely due to the lack of consciousness among the people, including museum people about the rich contributions made by the tribes to the civilisation. Atleast as a beginning, a series of repeated exhibition on different aspects of contribution of primitive tribes to Indian culture might be organised in different parts of the country and help the common man to appreciate and respect our tribal folk.

A unique example of what museum can do for the tribal people might be the *Kheria Project*, undertaken by District Science Centre, Purulia, few years back.

Kheria is an underdeveloped primitive tribe inhabiting mostly in the remote border districts of Bihar and West Bengal. DSC, Purulia, had undertaken a community development project for this tribe. They offered the tribes requisite co-operation and basic knowledge of improvised technologies of agriculture – supplied them modern scythes, hoes, etc., helped them to get better agricultural field. They gave them basic knowledge of fundamental education and health & hygiene. The museum provided them some technologies for alternative sources of income, such as, they gave moulding machines for preparing containers of *sal* leaves, which are abundantly available there. The project had generated much stir in the museum circle – it had got good publicity and obviously did some good for the poor, helpless, tribal people, who were thriving for survival. Unfortunately, this project had been abandoned by the museum due to some reasons.

Museums and Minority Community

The cultural contribution of minorities must be dealt with and understood. Because some societies refuse to respect some human communities, either because of some fundamentalist religious sentiments or because of social stigma, or simply due to body colour, this is no reason, rather right for museums to blank them out as if they did not exist at all. In India, USA, UK, South Africa, even to some extent modern USSR, this is an acute problem.

In some instances the museum has accepted the culture of its minorities as museum curiosities but rejected the people who created these cultures.

"In the USA..." says John Kinard (1972), "....the problem is illustrated by the fact that you would never know from visiting the average American Museum that the black man exists in America and has made significant contributions toward the development of our country. You may search in vain in our museums to discover with what great esteem the black man is regarded, what the black man contributed to civilisation, how he lived, and what he was forced to suffer. Believe me when I say the American Museum has ignored the Black American, and it is only recently that a few art museums håve shown the works of black artists. In those rare instances where there is an exhibit that has to do with minorities it is designed in a fashion that represents the white man's interpretation of the particular minority. How can it be otherwise since museums have refused to hire minority people in any significant capacity?"

Though, here, in India, the situation is not so much discouraging. Here the rights of minorities are reserved legally. But adequate attention has not so far given to proper understanding of their culture and contribution to the society.

The Urban Museum and the Community

The urban community generally shows cosmopolitan character – varying degrees of people are there starting from the upper most well off, and intellectually (so-called) developed sections down to the pavement dwellers. Indian Museums grossly failed so far to serve all the communities especially the under privileged. Only the economically and intellectually well off sections or the more privileged sections of the community remain the main beneficiaries. This situation is most acute in the metropolises of India.

The recommendations about the urban museum's community service by a special committee of the American Association of Museums in a report to the Dept. of Housing and Urban Development, in the year 1972, is worth quoting and I think these are quite relevant to the Indian situations too –

1. To meet the needs of changing urban environment, the committee recommends : The establishment, where feasible, of new systems of neighbourhood museums and similar community projects.
2. To meet the need for coping with society's most serious crisis, the committee recommends : The highest priority of exhibitions, acquisitions and programmes relevant to current urban needs and problems including as subjects, but not limited to the population explosion, the environmental crisis, war, ageing, disease, drug abuse, inter-group relations, and the histories of neighbourhoods within the city.
3. In order to implement successfully and to put on a permanent basis the fruits of the recommendations above, the committee also recommends: The employment of persons with an understanding of and the motivation to work with urban problems: even though, as is often probable, such persons lack the traditional, academic qualifications for museum work : .... the consultation with community representatives and groups at every stage of the exploration and implementation of surveys, plans and programmes in this new field, and the consciousness that needs of such groups are what the programmes directed at and therefore that only with their inclusion and participation at initial policy making levels can the enterprise hope for success.

Very recently, the Birla Industrial & Technological Museum, Calcutta, has started two unique programmes directed towards the urban children –

One of them is the permanent Children's Gallery, based upon the famous Swiss psychologist Jean Piagget's theory on cognition and intellectual development of child. This gallery is open to the children of the age group from 2½ to 11 years. The all participatory objects are fabricated as games and according to the psychological and educational needs of the growing children. But the noblest feature of the gallery is that the authority has taken the voluntary services of Calcutta's students, researchers, professionals and housewives to run the daily guiding works of the Gallery.

Secondly, the BITM has inaugurated on 5 June 1988 (world environment day), a 'Pet Library' to make the students environment conscious and to establish a sort of emotional relations between children and animals. This type to pet library is probably the first of this kind in this subcontinent, if not in Asia. Here, Calcutta students of Class IV & V are taken as members (they do not need to pay anything for it). They are given a pet (at present fishes, birds and rabbits) encased in a cage or bottle, as the case may be, for a week. They are also supplied with feeding and care manuals. The student has to take the pet home, keep there for seven days, feed and care them, and observe their unique features and habits. The children are also supplied with a questionnaire to facilitate the observations, which the child has to fill up and submit at the time of returning the pet. This has evoked enormous enthusiasm among the children.

These two efforts may be regarded as the pioneering step toward the urban community services, despite their initial failure to involve the much-deserved under privileged classes.

The importance of organising various communities in a country for general understanding of common or national problems affecting all sections

A museum is a collection of objects that reminds the visitor about his/her experience in the past ages (as a member of the society, tribe or nation to which he/she belongs).

It has been repeatedly seen that in times of oppression or crisis, examples of a people's cultural achievements of the past as expressed through works of art (sculpture, painting, architecture) and folkart (textiles, metalcrafts, dolls and toys, etc.) directly encouraged a kind of social upsurge.

For the reasons stated above, national collections in different nationalities of continental Europe and Balkans brought a ray of hope to the long oppressed and subdued people who were forcibly ruled by the Austro-Hungarian empire.

The force of a national collection could be understood if we study the history behind the growth of the National Museum of Hungary. It is to be noted that the Great Poet and Cultural leader of Hungary, Petofi was associated with the collection and it's opening for inspection by the people.

Museums, sometimes, spark off important cultural discussions; the appreciation of the art contribution of non-European civilisations was mainly based on the effects of the European Museums' collections of non-European art. This aspect of Museum's contribution is best illustrated by the collection of the East India Company displayed at the so-called "India Museum" and subsequently the Victoria and Albert Museum, London. Similarly the fabulous collections of Chinese paintings or Egyptian antiquities in the British Museum and the Louvre not only gave birth to sinological or egyptological studies but also generated sufficient interests for the writing of art histories.

At present, India is disturbed by different types of social prejudices. Museums as social instruments may directly help the fight against obscurantism. After inspecting the incomparable craftsmanship of our Muslim brethren, it is very difficult to harbour any underestimation of their role in the growth of the cultural heritage of India.

Method of greater co-operation between the Community and the Museum

To meet the needs of the community, cultural, educational and recreational, better co- operation between the museum and the community is obvious. As a way the museum should consider the possibilities of co-operation with other organisation and institution that have similar functions. Museums can seek co-operation from educational institutions, such as schools, colleges, universities; mass media – like, newspaper, radio, national television network; cultural organisations; local social organisations; and lastly the industries. In this regard some pioneering efforts were done in Britain during last decade. Some of the examples of such co-operations are as follows :

1. To have long-term, beneficial effects on the relationship between museums and schools, to increase amongst school-teachers an awareness of the education-potential of museums, Oxford City and County Museum at Woodstock by arrangement with an educational college sends some of its staff to take participation in the teaching of the first year students.
2. At Sheffield, the University has offered research fellowship to a museum staff of the City Museum to investigate the history of a site that was being developed as an industrial museum. This is an example of co-operation between museum and university.
3. New kinds of links with industry are being made. In addition to receiving donations of objects or funds from industrial corners, some museums (for instance, Science Museum in London and Leicester City Museum) are working with industry through permanent joint committees. Such arrangement, ensure continuous support and a regular up-dating of the relevant displays. The museum at Stoke-en-Trent, where the national reference collection of post-mediaeval pottery is currently being assembled, collaborates extensively with industry in an ambitious programme of research, recording and preservation pertaining to the earlier phases of development of the Staffordshire pottery industry. In other places it is not uncommon for the research laboratories of industrial concerns to assist museums in solving technical problems concerned with the identification, handling or conservation of a variety of materials.
4. Also in the arts field, many museums are now collaborating with local and national bodies whose interests lie primarily in the realms of music and drama. For example at Norwick, the Castle Museum played a part in the City's Triennial Festival by adding a visual element, of pictures and sculptures, to the general programme of festival performance.
5. The Museums of Britain are playing important role in the conservation of the natural environment, in educating the public concerning the need for such conservation. In this

field, museums co-operated with a large no. of Govt. agencies and local bodies like the Nature Conservancy.

Now let us look into the situation prevailing here, in our subcontinent :

In India, some attempts have done earlier in the field of archaeology and natural history. Co-operation between the Archaeological Survey of India and museums are more or less frequent event, e.g., the excavation at the site of Chandraketugarh by the Asutosh Museum with the direct co-operation of the ASI. The Zoological and Botanical collections of the Indian Museum, Calcutta, are being looked-after and maintained by the Zoological Survey of India and Botanical Survey of India respectively.

But the science museums of India under the National Council of Science Museums have derived the co-operation from academic institutions and mass media much more successfully than their counterparts in the field of art, archaeology and anthropology. Even the natural history museums, due to their late coming could not utilise them properly.

All the museums under the NCSM co-operate with the schools of their respective localities, conduct several training programmes, hobby courses, awareness programmes for the school students and also conduct Teacher's Training Programme every year, as mentioned earlier.

These museums, especially the city museums, very much successfully utilise the newspapers for their campaigning in the form of advertisements, small insertions, tabloids, reportage, features, etc.

But the most interesting and effective work has been done so far among these, by the BITM, Calcutta. The museum with active collaboration of the Calcutta Doordarshan conducts several educational programmes both in the local programme of the Doordarshan as well as in the National Programme.

For local transmission, their competent educational staff deliver interesting scientific demonstration lectures on physical science related to the school curriculum. Sometimes interesting scientific quizzes as innovative games are also done. Both the programmes happen to be in Bengali only.

One of the most popular programmes of Indian Television's National Programme is *Quest*, a monthly science quiz programme organised jointly by the BITM & the Calcutta Doordarshan. Here the main aim is to explain different physical phenomena with the help of experiments. To make more interesting, this is generally organised in quiz-form. Spectators may also take part by answering the problems by post. The programme is in English and the Director, BITM himself conducts it with the help of museum's education staff and also with active participation of some educationists from outside the museum. This programme has evoked tremendous enthusiasm throughout the India (of course among upper and middle class TV-seeing sections).

These two examples are pioneering efforts to show how the co-operation between mass media and museums can be properly utilised for community service. Bangladesh Television's regular programme on archaeological relics and history of any particular locality is notable, but this programme is far from being used by any museum by complementing it from their own resources.

Running Community Service in Indian Situation

Indian society is heterogeneous in character with a striking contrast in its various segments.

On one hand the highly intellectual class (administrator, scientists, technocrats) and the elite businessmen who are fully conscious of modern developments and with changed lifestyle. At the other extreme, are the poor, illiterate rural population and the tribal, relatively undisturbed by modernism. In between lies the third group – the students – due to their homogeneity, museums in India, so far attempted to render their services to them first.

This extreme heterogeneity made our museum's task extremely difficult. The type of community and its problems the Western museums have to serve is strikingly different than that in India. The West is in advanced stage of industrialisation and due to mechanisation of life, materialistic trends have developed; therefore they have an urgent need to make provisions for the cultural education of the people in order to maintain balance. More so, these communities are mostly literate and urban. Whereas in India it is just reverse. Here emphasis on both scientific and cultural education through museums is needed.

A few tentative points, suggested by P.D. Sud in 1966, which are still quite relevant, need consideration in planning scientific and cultural education of our people through museums:

1. We must lay stress in the display to impart scientific and cultural education, which is of utility to our masses, through our existing museums. In our urban, our museums, along with displays, "Museum Friend Circles", "Community Clubs", be developed.

   Such urban museums could also develop museum extension services to meet the requirements of our rural population. For this, possibility of securing additional funds from the established community development programmes may be explored.
2. Rural museums on the pattern of *Vigyan Mandirs* schemes be set up.
3. Emphasis may be laid on local materials, and local institution and other local resources, aiming at developing the scientific outlook and imparting cultural education – because people will be attracted more easily being familiar with their own resources.
4. The general display pattern in these museums must aim to explain phenomenon such as, the origin of Universe and relation of earth to it; evolution of plant and animal life; appearance of Man; Man's knowledge of raw materials, their utilisation and expression of his essence through art, artefact rather than individual grouping of exhibits under various heads, as in the case of museums attached to the *Vigyan Mandirs*.
5. Extension of museum through mobile exhibitions be taken in hand. These mobile exhibitions, if jointly sponsored by various departments with more effective guide services could do much for a rural community.

A draft programme for a museum in India may include :

- **Integration on the emotional level** – Local legends, fairs and festivals, historical monuments and sites can provide themes for the involvement of the public and therefore should be incorporated in the educational and cultural programmes of museums.
- **Cultural Competitions** – Folk arts of a particular region may be its subject.
- **Mobile Exhibition.**
- **Special programmes for physically handicapped and mentally retarded people.**
- **Revival of the fading arts and crafts** – Vocational Training courses on local arts and

crafts can be organised. Museums may help in marketing by means of its more easily accessible buying populace.

- **School-orientation Programme** – Museums can organise special programmes for teachers and students of the secondary and higher secondary schools to use museums' resources more in their daily routines.
- **Environment awareness programmes** – Through museums of natural sciences, technology, art and history, a deep consciousness should be created in the community about the urgency of preserving the renewable and non-renewable natural resources on which the survival of humanity depends. The mission of creating a public conscience with regard to natural resources, is also important with regard to cultural treasures that are in danger of disappearing or being destroyed in this critical time of worldwide devastation.
- **National Integration Programme** – Museums can arrange in turn exhibitions on the culture, art and crafts of other communities including those of minorities and tribes, which will facilitate better understanding among the communities.

Several others may be done; the immediate need is a good initiation.

Conclusion

A single-paragraph conclusion can be drawn of the fact, which I was trying to convey throughout the essay, as John Kinard (1972) said, "Museums can no longer serve only the intellectually elite, the art connoisseur, and the scholar. Our visitors can no longer be limited to the enlightened, the educated, and the well to do. Any institution that calls themselves museums and does not note with great care the overwhelming possibilities for service to the community should rethink their position so that there can be no undue criticism of these respected institutions and their traditions. Museums must be sensitive to the cries of modern man for a more perfect way to live to know the truth".

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GANDHI MEMORIAL MUSEUMS : THEIR ROLE IN SPREADING THE MESSAGE OF GANDHIJI TO THE PUBLIC

Atul Chandra Bhowmick

Mahatma Gandhi conveyed no separate message to the public except saying "My life is my message". With this saying Gandhiji indicated that the process he followed in doing deeds, the way he lived and his love to all is his only message to the people. He had a simple living, but had a high thinking. Throughout his life Gandhiji loved all and hatred none with no distinction of caste, creed and nation. He was a strong believer of **ahimsa** (non-violence) as a part of his policy, for the vindication of political and social rights and liberty. This is his singular weapon used as mission to fight for freedom of India from the shackles of the British **Raj,** to attain his goal and to reconstruct the polity and society in befitting lines. Many men were inspired by his thought and left everything behind, even Imperial services considered highest in position of power and pelf, against imperialism. He had a mission that the Indians should enjoy ultimately freedom in all spheres of life–economic, social and cultural. In social philosophy, Gandhian ways and means and village reconstruction programmes, his concept of truth, loveforce and compassion stand confirm. Unleashed unlimited atrocity ways so much so yet he kept non-violence with a view to achieve freedom as its end. The spirit of **satyagraha** (devotion to truth and justice), peaceful resistance against the instrument of oppression, exploitation and injustice actually emerges from the unconquerable soulforce. As a path-finder to establish peace, justice and amity for mankind museums can take an active role in spreading his life ideams to the teeming masses of India. Gandhiji wanted to unite all in a common bondage in the midst of mutual bickerings of the rival groups with love. He believed love never ceases. It never slacks.

On observing Gandhiji's deep love and sympathy to exploited people Rabindranath Tagore addressed Gandhiji **Mahatma** (noble) on 17th February, 1915 at Santiniketan and Netaji Subhas Chandra Bose, as Father of the Nation, on 2nd October, 1944 in a programme to celebrate the **Mahatma's** 75th birth auniversary in Rangoon, as he rejuvenated the mass for freedom struggle of the Nation. He was murdered treacherously by shooting up three bullets by Nathuram Godse on 30th January, 1948 on the way to a prayer meeting in Delhi.

After his death the National leaders, Government and Non-Government organized the Gandhi Memorial Fund and later the Gandhi **Smarak Nidhi** (Trust) to preserve his heritage with other programmes. A corpus amount of about twelve crores of rupees was raised before long by public contributions. The idea behind the establishment of the Trust was to preserve Gandhiji's memory,

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to spread his life, works and his philosophy of life to all sections of people in a very simple way aiming to inspire the mass to be honest and selfless in life. Ultimately the **Nidhi** unanimously resolved to set up four Gandhi Smarak Sangrahalayas, one, each at New Delhi, Sevagram, Sabarmati and Madurai in 1949 in a meeting to commemorate the sacred memory of **Mahatma** Gandhi. The museums would collect, preserve and display materials connected with Gandhiji's life, thoughts and activities. At present the number of Gandhi Smarak Sangrahalayas in India have exceeded to what was decided earlier and there are now fourteen in all. These were established willingly in different parts of the country with which Gandhiji had attachment whatsoever and have objects relating to Gandhiji's life and activities. But these two museums–the **Mahatma** Gandhiji's Museum, Canera High School, Mangalore, Karnataka and the **Mahatma** Gandhi Hindi Sangrahalaya, Hindi Bhawan, Kalpi, Uttar Pradesh had no personal connection, nor have Gandhiji's objects, yet these have named **Mahatma** Gandhi Museum only to memorise him. Practically these are art-archaeological museums. Of all of these – the Magan Sangrahalaya at Wardha, **Mahatma** Gandhi Museum at Mangalore and the Gandhi Bhawan at Beleghata, Kolkata were established before his demise and the rest others, after his demise. The Gandhi Sangrahalayas are dealt herein following the successive dates of their establishment.

1. Magan Sangrahalayat Maganwadi, Wardha, Maharashtra – Established in 1938. Raw materials of **khadi** and village industries, their finished products and the used articles of **Mahatma** form the core collection of the museum.

2. **Mahatma** Gandhi Museum, Canera High School, Mangalore, Karnataka – Founded in 1938 and is run by the Canera High School management committee. The core part of the collection consists of paintings, stone and metal sculptures, stone inscriptions, palm-leaf manuscripts, gold and silver coins, art and archaeological objects, anthropological and zoological specimens including horns of the African rhinoceros, antler of the African deer and other specimens. Gandhiji gave consent to the school committee for designating the museum with his name as the school committee wished to remember his long stay and activities in South Africa at Durban, Natal and Pretoria.

3. Gandhi Bhawan, Hydari Mansion, Beleghata, Kolkata–Established in 1947. Gandhiji lived here from 13th August to 6th September, 1947 during communal riot in Kolkata. He discussed about the possibilities to set communal harmony between the Hindus and the Muslims with the **Santi-senadal** (peace volunteers) in this house. He observed fasting also. On 7th September, 1947 at the time of his departure from Kolkata to Delhi the **senadal** requested him for a message, then he wrote only, "My life is my message". The collections of the museum are not many and these are wooden **charkha** (spinning wheel), cotton thread bundles (**khadi**), bedstead, bed cover, pillow, **dhoti,** carpet, wooden spoon, sandal, leather sandal, bamboo stick, card stirrer, bronze cast of Gandhiji, bronze **pickdani** (spitton pot), water pot for watering garden, clay model of goat and three monkeys showing in the attitude of speak not ill, hear not ill and see not ill, spectacles, watch, etc.

4. Gandhi National Museum, Rajghat, New Delhi – 110002 – This is the central museum, founded in 1949. The museum was first started its appearance in Mumbai and later shifted to New Delhi at 2, Man Singh Road in 1950 to a temporary house. Ultimately it was shifted in its own building at Rajghat permanently.

5. Gandhi Smarak Sangrahalaya, Sevagram, Wardha, Maharashtra – Founded in 1949. But the Sevagram **ashram** (monastery) was established in 1936. In July, 1933 Gandhiji disbanded his **Satyagraha ashram** at Sabarmati in Ahmedabad and moved it to Sevagram at Wardha in 1936. He reached at Segao (later renamed it Sevagram) on 30th April, 1936 travelling for three years in different places to live among **Harijans** (Sons of God) there. The Basic education as conceived by Gandhiji was introduced under the Wardha programme to the distressed humanity.

The Basic education has two stages (I) Lower Basic (**Nai Talim**) education for five years and (2) Post-Basic education for three years, total being eight years for the primary education. Mother tongue is the language of instruction. This system had immense potentialities. It laid an emphasis to build up a developed mind and to make worthy citizens of the nation. A co-operative society life is encouraged. Gandhiji's hut at Sevagram had turned to headquarters of the Gandhian programme of village reconstruction. Many national leaders, like Khan Abdul Gaffar Khan, Jawaharlal Nehru and many others came to Sevagram. Quit India Movement proposal was adopted in principal by the Congress Working Committee in 1942, which was reaffirmed by the Congress at its annual session in Mumbai on 8th August, 1942. The spirit of the movement was 'Do or Die' and to behave like a free citizen following the path of truth and non-violence. It was decided to start a mass struggle on the widest possible scale. In the early hours of the morning of August 9, 1942 all the Congress leaders were arrested. Gandhiji was confined to the Agha Khan Palace in Pune. The Congress was declared as an illegal body. As there was no definite organization and a complete lack of leadership, violent riots, assaults and sporadic disorders, such as the cutting of telegraph and telephone lines, damaging of railway tracks, stations, etc. occurred on a large scale in different parts of India. The Government again adopted strong measures of repression including firing from aeroplanes. According to official estimates more than 60000 people were arrested, 18000 detained without trial, 940 killed and 1630 injured through police and military firing during the last five months of 1942.

Gandhiji lived at Wardha for 10 years from 1936 to 1946. His pilgrimage in Noakhali on 6th November, 1946 and left Noakhali on 2nd March, 1947. Due to machination of some interested persons a devastating communal riot was occurred in Noakhali in 1946. The majority community carried on widespread arson, killings, etc. over the minority there and it was difficult to obtain relief from the Government, rather the rioters received clandestine support. In the mist of this devastation arrived Gandhiji to bring back sanity in place of hatred and greed, fearlessness in place of cowardice and succour to the sufferers and needy. Here he started a new experimentation of truthforce and soulforce against bruteforce and insanity.

The worthy visiting items here are the Gandhi-Kasturbai **kutir** (living house), made of bamboo, cane, earth, tiles, etc. – all locally available materials and the Mira Bahan (British admiral's daughter) **kutir** and daily domestic other items, like rope, cane basket, winnowing fan, husking lever, pottery, dolls and toys, **dhak** (tambour), **dholak** (drum), etc. These are made as cottage industry products under the Basic training to self-support.

6. **Mahatma** Gandhi Hindi Sangrahalaya, Hindi Bhawan, Kalpi, Uttar Pradesh — Established in 1950 and is administered by the Hindi Bhawan. It is not a biographical museum. The collections of archaeological antiquities dating from early centuries, terracottas, stone and metal sculptures, stone inscriptions, coins and their moulds, manuscripts, etc. are the main items of the museum.

7. Gandhi Museum, Bhavnagar, Gujarat – Established in 1955 on the Cambay gulf.

8. Mani Bhawan Gandhi Sangrahalaya, Mumbai – Founded in 1955. Gandhiji used to stay here whenever he came to Mumbai between 1917 and 1934. From here he launched against the Rowlatt Act of 1919, wrote letter to the Viceroy Lord Chelmsford supporting the **Khilafat** Movement of two brothers, Muhammad Ali and Shaukat Ali. This mass movement was organized by Maulana Abul Kalam Azad. The part played by the British in the defeat of Turkey and the dismemberment of the Turkish empire in the First World War offended the religious and historical sentiment of the Muslims, and caused them to adopt an aggressive anti-British attitude. First Independence Day was celebrated from here on 26th January, 1931 and he announced for self-government on 1st January, 1932 on his return to India from England on 28th December, 1931.

9. Gandhi Samarak Sangrahalaya, Madurai, Tamilnadu – Founded in 1959. Gandhiji had visited the **Harijan** areas in Madurai in 1921 and to commemorate his visit the place was selected for establishment of a museum.

10. Gandhi Smarak Sangrahalaya, Barrackpore, West Bengal – Founded in 1961. From 1971 the museum is administered by an autonomus body.

11. Gandhi Smarak Sangrahalaya, Sabarmati, Gujarat – Established in 1961. It will not be out of scope to mention that Gandhiji finally decided to leave South Africa and to return to India in 1914 when he saw that General Smarts, the Governor of South Africa had accepted many demands of Indians. Accordingly, he left the country and sailed for London where he reached on 6th August, 1914. But soon he felt ill for severe cold there and returned to India on 9th January, 1915. On return to India he established the **Satyagraha ashram** at Kochrab in Ahmedabad in 1915. But the first **ashram** in his life he founded at Phoenix in South Africa in 1913 for staying there to launch movement again against the British, if situation demanded. The objective of the **Satyagraha asharm** is to teach plying of spinning wheel, agriculture, tannery, hand-made paper, soap making, **khadi** production, **ashramite** community life, prayer, truth and **ahimsa** and to educate the **Harijans. Harijan** Sri Dudavai, his wife Daniben and their daughter Lakshmi were staying in the **ashram** with Gandhiji's consent. But trouble started when they fatched water from the well. They were not allowed to take water from the well, nor even to touch to make it impure. Rather other **ashramites** hated them. On observing this Gandhiji accepted Lakshmi as his foster-daughter. It was his broad mindedness. But as a protest against the acceptance of a **Harijan** as his daughter the merchants of Ahmedabad stopped suddenly the donation to the **ashram**. At this critical junction Ambalal Sarabhai had donated a sum of rupees thirteen thousand to meet the crisis.

In July, 1917 the **Satyagraha ashram** was shifted on the bank of the river Sabarmati and later the **ashram** was renamed as **Harijan ashram** to show honour to **Harijans**; but popularly known to all as the Sabarmati **ashram.** In July, 1933 Gandhiji disbanded the **ashram** and moved it to Sevagram in 1936. The Contress Working Committee decided civil disobedience by breaking salt law on 15.12.1930. Accordingly, on 12th March, 1930, with a pledge for independence, he started his famous historical march from Sabarmati **ashram** to Dandi in Western India to make salt on the sea-shore in defiance of the salt law regulations. He left the

Sabarmati with 79 chosen male and female volunteers and covered a distance of about 225 miles, continuously walking for 25 days. On an average he walked I **jojan** (= 9 miles) a day and reached Dandi on 5th April, 1930. Throughout the long journey Gandhiji received homage and ovation. The villagers flocked from all sides, sprinkled the roads, strewed leaves on them, and as the pilgrims passed bowed on their knees. On the way, thousands joined the marchers. It was veritably a triumphal procession and served as the signal for a mass movement on a large scale, involving mass strikes, the boycott of British goods, grave cases of terrorism, such as the armoury raid in Chittagong, and the setting up of parallel governments in several places. The Government adopted stern measures of repression. According to official figures there were 29 cases of firing resulting in 103 **satyagrahis** killed, 420 injuried and 6000 people were imprisoned in less than a year. Indiscriminate and merciless beating of men and women formed a feature of the repressive campaign undertaken by the Government. He announced to loot the salt storage of Dharsana and for that he was arrested and put to prison in Yeravda jail. He was released on 26th January, 1931.

Visitors' main attraction here are the **upasana mandir** (open-air prayer ground), **Hridaya kunj** (residence of Gandhiji and his wife, where they lived for 12 years, Vinoba/Mira **kutir, Nandini** (giver of joy) guest house and the **Khadi Vidyalaya,** Gujarat **Khadi Gramodyog Mandal** of indigenous technology, **Garushala** (dairy), **Khadi Gramodyog Prayog** for solar energy, bio-gas and **Harijan Sevak Sangha.** Mahadev Desai's diary and library is lying here. Library has 20000 reference books, 270000 photographs in the museum and 8000 seats for accomodation in the auditorium.

12. Gandhi Sangrahalaya, Ashok Raj Path, Patna, Bihar – Founded in 1968.
13. Gandhi Museum, Gandhi Bhawan, Mahatma Gandhi Marg, Lucknow–Established in 1973.
14. Gandhi Museum, Mandapam camp, Vellore, Tamilnadu.

Collection

The aforesaid museums, except the Mangalore Canera High School and the Kalpi Hindi Bhawan Museums are personalia museums preserving the objects relating to Gandhiji's life and activities. Collections of all the Gandhi Sangrahalayas are more or less same, only variation in numbers of collection. The items of objects are the plaster cast model of the Gandhi column, designed by Acharya Nandalal Bose, portraits, replicas, letters written by him to many persons in India and abroad and the photostat copies of the letters, paintings, several photographs, his written and edited journals, viz., Young India (later named it **Harijan**), Navajiban, 1909 Hind Swaraj (Indian Home Rule) and books by and on him in all the majar Indian and foreign languages, viz., Gujarati, English. French, German, Russian, Dutch, Purtuguese, Spainish, Italian, Swedish, Japanese, Chinese, Thai, Burmese, Indonesian, his utensils, like wooden and bamboo **charkha**, wooden plate and bowls (**karatha**), spoon, forks, card **churner** (stirrer), stone plates, glasses, stone piece for cleaning feet (flesh rubber), stone black bowl, used for hashed vegetables, China clay white bowl, used as fruit dish from 1944 to 1947 and red bowl, used for sliced fruits since 1944, watch, spectacles, **chappals** (sandals), plam-leaf hat (**kanup**), kerosene lantern, a shirt sewn by him, bed cover, desk, reed pens and bamboo pen holders, photographic records of his prayer, replica of has prayer, speech discs, blood-stined cloths, metal replica of the fatal pistol, one bullet, oil paintings of national and political leaders, illustrious persons, e.g., Netaji, Rabindranath Tagore, Sri Arabinda, Raja Ram Mohan Roy, Dr. Martin Luther King Jr., Badshah Khan, etc. who came in contact with Gandhiji and their speech records, cassettes of **swadeshi** songs, life-size portrait of Gandhiji in oils by Mr. W. Langhammar. Museums had collected all these objects in eight years.

The Gandhi Smarak Sangrahalaya at Barrackpore has on display 38 oil portraits of National leaders portrayed by artists Sri Anil Sengupta, Kalwant Sharma, J. S. Indra, Shamshad Hussain, Ms. Hena Chakraborty and Ms. Shobha Broota and the exhibition of these portraits is arranged in his memory in the fiftieth year on his martyrdom. Further on display are one original drawing by Ms. Chittraneeva Chowdhury, titled 'Gandhiji in Santiniketan' and another, a lithoprint of an original painting by Anil Kumar Mukherji, titled 'Gandhiji at a prayer meeting in Sodpur **ashram**', 81 running feet mural painting on the life, activities and thoughts of Gandhiji and the phases of the freedom movement done in Indian style by Prof. Dhirendra Nath Brahma, a disciple of Acharya Nandala Bose, the most celebrated artist of Bengal, about 800 photographs of Gandhiji's birth place — Porbandar, Primary school, Jalianwalla Bagh massacre, prison, route map of Gandhiji's walking tour of 116 miles through 47 villages in the districts of Noakhali and Tipperah, **palki** (palanquin), bamboo culvert, march to Bhadrak, Cuttack, Jaipur, Champaran and 30000 photostat copies of letters by and to him. The museum maintains a library, the number of reference books presently being more than 8000, journals and has an auditorium with 400 accommodations.

Aim

The Gandhi Memorial Museums are aimed at to educate the public in the aspects of Gandhiji's life, thought, ideas, rural techniques and services to humanity in a very popular and attractive way. His daily used objects give an idea of his simple living, photographs show his activities. The photographs of salt **satyagraha** in 1930 make visitors more and more inquisitive to know the details of it, likewise the incidents of Champaran in North Bihar in 1917 and the **tinkathia** system, as three **kathas** out of twenty (which make one acre) had to be planted with indigo, the Chauri-chura **thana** (police station) in Uttar Pradesh burning in 1922, the **kheda satyagraha** of cultivators in 1918 at Kaira district in Gujarat. Gandhiji advised the cultivators to stop payment of the tax. He observed penance by observing five days' fasting for burning of the Chauri-chura **thana.** He was arrested for this on 10.3.1922 and imprisoned for six years for sedition. He was sentensed many times on other occasions. He protested against Jalianwalla Bagh atrocities in 1919 in the Punjab. Troops under General Michel Dyer fired 1600 rounds of ammunition into the unarmed crowd, who had no means of exit. Even according to official estimates 379 persons were killed and 1200 wounded were left unattended. Martial law proclaimed in the Punjab. During the early twenties Gandhiji came forward to build up a self-reliance experimentation – less idyllic social order **Khadi Pratisthan** at Sodpur, about 7 km. away from Barrackpore on the south. This was one such institution, which worked as livery to fulfil the **Mahatma's** dream, it grew up under the leadership of Satish Chandra Dasgupta, a renowned chemist and Gandhtji came and stayed here on several occasions, he used to call Sodpur his second home and this **Khadi Pratisthan** once served as the main link between Gandhiji and Bengal.

Necessarily the objects displayed in these Sangrahalayas convey information to the onlookers and the museums have become powerful media of communication in the field of public education. The visual method of exhibitions of these museums fosters to the majority of museum viewers the Gandhian ideas in a shorter time than expressed by words – written or spoken. The application of visual aids of photographs and letters brings a bright and lasting impression in the minds of visitors than the dull, monotonous and hackneyed atmosphere of the four-walled class-rooms for formal education. Clear, coherent and judicial display is the hall mark of the museums in the field of his appeal for peace and harmony and the success of display would very much depend on careful planning, knowledge on the theme of display and skill of the museum staff. Systematic arrangement of exhibits presents an enduring spirit of Gandhiji in proper perspective. The presentation of the objects is considered as an effective language of the museums. Labels to objects serve as aids to mass education and the visitors could read the labels avidly, if they desire so. Film shows on Gandhiji's life and activities are screened on Gandhian thought. The audio-visual method of instruction is proven to be many times more effective than conventional method of instruction. To look, to see and to observe the documents of the museums are considered as the natural way to learn about Gandhiji. He continues to inspire us through his timeless message of truth and non-violence. This type of invaluable informal learning provided by the Gandhi Memorial Museums to the general public is becoming a source of information on Gandhiji. The effectiveness of education through these museums is based on direct visual contact between the viewers and the objects. The reference libraries of these museums contain books written by and about him in Indian and foreign languages on Gandhian thought and philosophy. The reading rooms attached to these libraries have files of weekly papers and magazines on Gandhiji's ideals. The valuable and popular documents of the museums are the letters written by and to him and their photostat copies, notes and petitions are available for consultation. All these communicate every facet of the history of freedom movement in India. The museums reveal his **seva-dharma-service** to humanity with love and compassion.

The Gandhi Memorial Museum at Barrackpore recently organized a travelling exhibition at Garurphadi in Garifa in North 24 Parganas, West Bengal to spread Gandhian thought for lay public and a 8-day long course on Gandhian thought. Academicians delivered lectures in the course. Anyone, who is interested, Indian or foreigner, can join the course. The museum has undertaken an action-research programme – **balwadi,** a children's preparatory school for the economically and culturally downtrodden slum-dwellers near the museum for cultural change as per Gandhian thought. This is a unique programme in museum parlance. The Gandhi Memorial Museums publish booklets and books on Gandhiji, of them worth mentioning are A Living Memory, Shoft Life History of **Mahatma** Gandhi (in Bengali), Indian Fights for Freedom, Gandhiji on Education, Gandhi and the Eclipse of the Raj, Economic Thoughts of **Mahatma** Gandhi (1966), **Panpratha Rodhe Mahatma** Gandhi (1998, in Bangali), Gandhi News (1998, in Bengali), etc.

Gandhi Memorial Museums, thus stand out always to uphold the educational value of the museum objects. These museums are the fountain of knowledge on Gandhian thought and ideals and the temple of scholarship.

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